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AMERICAN CULTURE AND THE NORTHWEST COAST

BY A. L. KROEBER

COMPONENTS OF AMERICAN CULTURE

PRE-COLUMBIAN American culture is theoretically separable into four groups of ingredients. The first includes elements of civilization brought by the first immigrants to the hemisphere. The second component consists of culture elements developed on American soil, each in most cases presumably at only one spot, but carried widely beyond this. The third comprises traits or aspects of culture also American in origin but remaining local in their diffusion, limited to tribes, culture-areas, or a few contiguous culture-areas. The fourth consists of elements that may have been introduced from the eastern hemisphere into the western during the course of development of the generic and local American cultures.

(1) *Original common American culture traits.* These elements are recognizable by two criteria. First, they must be of hemispheric distribution: not necessarily universal or contiguous, since they may have failed to be of utility in some environments and have been discarded, or again have been superseded by later growths developed on American soil. In general, however, traits of the present class must occur in both North and South America. Second, they must be of a simplicity or "primitiveness" that justifies their being attributed to the comparatively remote time when America was first settled. As to this time, Boas and Wissler[1] can be followed: it was approximately the close of the

[1] Boas, The History of the American Race, N. Y. Acad. Sci., Annals, XXI, 177–183, 1912; Wissler, The American Indian, 1917. It is perhaps scarcely necessary to acknowledge these works as providing the starting point of the present study. Wissler refers in his hypothesis to barely-developed stone polishing, which may have come earlier in Asia than in Europe; the dog; and the bow; as well as several admittedly

Palaeolithic. Perhaps the early pre-agricultural Neolithic would be a safer period to assume on account of the universality in America of the dog and the bow. If the absolute chronology of the stone ages of Asia corresponds to that of Europe, the first peopling and culturing of America then took place some ten thousand years ago. This lapse seems sufficient and not excessive for the racial, linguistic, and cultural diversification to have taken place which the historic American natives show.

It is well, however, to bear in mind that this introduction of population and culture in all likelihood did not happen at one historic moment only. Far more probably it went on for some thousands of years. In this way the coexistence, in this basic stratum of American culture, of the Palaeolithic harpoon and Neolithic bow would be accounted for. We are justified in speaking of a date such as 8000 B.C. only in the sense of its being the initial or perhaps the central point of the period of influx.

The elements of this fundamental stratum comprise the fire-drill; the harpoon, and probably the spear-thrower; the self bow with stoneheaded arrow; the simpler forms of handmade textiles, such as woven and perhaps twined baskets, mats, and wiers; possibly the mortar and the undressed metate for grinding; not unlikely some form of rattle, and, of wind instruments, the whistle and end-blown flute; and a certain stock of religion. This last included magic resting on the usual sympathetic and imitative concepts; shamanistic—that is, individualistic—control of spirits and disease; fear of the dead; a taboo on personal names; and crisis rites for individuals, especially for girls at adolescence, with perhaps whipping or other manhood tests for boys at puberty. The geographical distribution of masks in America suggests their inclusion in this stratum, although their frequent association with complex ritualism causes one to hesitate. Socially, this culture level seems to have been without exogamous sibs, unilateral descent, or totems in the narrower sense. Organization remained

Palaeolithic traits. Boas suggests the peopling as having occurred before "one of the last ice ages," which then separated the American immigrants from Old World contacts until after the retiring of the ice cap, whereupon the Americans flowed back and occupied parts of Siberia. The first entrants into America had the art of fire-making, breaking and cutting tools, and the dog; bow and lance are doubtful.

on the basis of blood-relationship and actual association in local groups.

(2) *Elements developed in America and widely spread beyond their point of origin.* This group of traits is easily the bulkiest of the several classes with which we are dealing. In it must be included the basic types of agriculture, both the primary maize-beans-squash form and the more localized adaptation in which manioc is dominant; with irrigation, fertilizing, the planter, weed-cutter, and hoe, and the dressed metate. It is hardly necessary to comment on the fundamental importance of this complex in producing stability and increase of population, with ensuing tendencies toward specialization of occupation and more intricate organization of society and religion and a broadened community sense. Closely allied to agriculture are pottery; tobacco; cotton growing, thread-spinning, cloth and the loom, very likely the half-loom for hung warps of rolled bast; and metals—certainly whenever smelted or cast, possibly when used raw. The shield should be added; the club with knobbed head or spike; quite possibly the blowgun, the stone ax, and the bark canoe. Masonry and pyramidal structures for religious purposes are surely to be included in this stratum. The man's house or sweat-house may be earlier.

On the side of society and religion, the following seem to demand inclusion in the group: the exogamous sib and totem, both patrilinear and matrilinear; villages or towns with a sense of solidarity; recognized chiefs or officials, whether hereditary or elected; confederacies; all real government, whether theocratic, autocratic, representative, or hegemonic; priests or religious officials as distinct from shamans; altars and perhaps shrines and regulated offerings; communal societies with their center of gravity resting in membership rather than in adult status; and religious bodies of more limited scope.

This mass of culture may be assumed to have originated largely in what will henceforth be designated as Cultural Middle America —the belt of highland and coast stretching from central Mexico to the Bolivian plateau. Civilization in this tract was so immeasurably more advanced than in the remainder of the hemis-

phere that such an inference is in the main inescapable. Higher cultures do borrow from lower ones, it is true: we have taken maize and tobacco from the Indian. But they borrow isolated elements; the stream is out from them. In addition, there are no prehistoric vestiges of advanced civilization ever having flourished outside Middle America, to make us pause; and the domesticated plants and animals whose history can be approximately traced—maize, cotton, potatoes, cocoa, tobacco, the llama and turkey—all lead back to the same area or its immediate peripheries.

In every aspect of culture, too, comparison of stages of development with distribution points the same way. Bronze, for instance, is best developed in Bolivia and southern Peru; alloying extends to Colombia and Mexico; the cold working of unsmelted copper, into Canada. In weaving, the heddle shed is certain only for Peru, probable for Mexico, problematical as an aboriginal device for the southwestern United States. The complete loom, weaving spun thread into true cloth, with square textile dress based upon it, extends from northern Chile to the Pueblos. Beyond, as Wissler has shown, the open frame with suspended bast cords is used over an irregular belt in North America—from southern Alaska to Florida. Still farther out, only hand woven baskets and mats are made. Pottery is polychrome from the Calchaqui to the Pueblos. In both South and North America there follows a scattering fringe of monochrome ware; then an area, as on the North Atlantic seaboard, of decorated but unpainted ware; and finally, in the extremes of both continents, absence of pottery. The architecture of Middle America is in stone—without broken joints—and its most wide-spread concept is the pyramidal platform. The masonry, used for dwellings, has penetrated north and south to the southwestern United States and northwestern Argentine; the pyramid, executed in earth, to the Gulf states and ancient Ohio valley.

So uniform is this slope from the cultural peak in the middle, so regularly are the lower phases of an art or of a set of institutions pushed out toward the continental peripheries before the higher phases that follow from the focus, that it is difficult to refrain

from inferring that the same process has occurred even in cases where direct evidence is lacking.

Thus some degree of probability may be posited for the former existence of an exogamous totemic sib system in Middle America. The reasoning runs thus. North of Mexico it is clear that in the main the most backward tribes are sibless; those of higher levels possess patrilinear sibs; the most advanced, including the distinctly agricultural ones, have matrilinear clans. Moreover, except for a group of peoples on the Northwest Coast, the matrilinear tribes live in a nearly continuous belt stretching from the Southwest through the Southeast, that is, in the part of the continent most exposed to Middle America. Further, one of the two determined areas of sib institutions in South America—and matrilinear at that—lies in Guiana at the end of the Antillean chain across which other culture traits may have traveled between the two continents. Everything accordingly points to an extension of the matrilinear clan system to include Mexico and other parts of Middle America. Yet it is lacking there, or represented by institutions like the Aztec calpulli that might quite conceivably be made-over clans but would be difficult to demonstrate as such. Is there an equivalent but higher phase of organization which would tend to supersede clan organization as bronze superseded copper, polychrome pottery replaced incised ware, the heddled loom crowded out the suspended warp frame? Apparently yes: the more intensive organization of Mexico and Peru, with its problems shifted from the social to the economic and political side, from marriage and descent of individuals to government of masses. Since no exogamous clan system has anywhere in history survived unimpaired into a great and highly integrated political society, it is hardly conceivable, if the Aztecs and Incas had ever possessed clans like those of the Pueblos and Muskhogeans, that they would have retained them as functioning parts of their cities and empires. This of course does not prove that they at one time had clans; but it leaves the possibility of reconstructing their former existence.

Further, the matrilineal tribes of the United States show in addition to their clans certain germs of political organization of a

kind which it is difficult to imagine the Mexicans and Peruvians to have escaped as the initial stages of their later political achievements. Such are the priest government of the Pueblos, the intratribal village relations and star associations of the Pawnee, the Natchez aristocracy, the Muskhogean confederacies, the league of the Iroquois. Final confirmation or disproof must emerge from careful analysis of the Middle American data; but, until this is forthcoming, the hypothesis here outlined seems empirically plausible as well as the simplest.

However, let it stand only as a sample. On the side of religion similar cases can be made out for several elements: the use of *Datura*, the altar, fraternities, for instance.

(3) *Elements of local American origin and remaining locally restricted.* These constitute in the main the superstructures built by tribes and groups of tribes on their common American inheritance. Their enumeration would be endless. A few examples in illustration will suffice.

Mexico: numerical, astronomical, and calendrical achievements, including zero sign; glyph writing; corbelled arch; concrete; sculpture.
Colombia: bronze-gold alloy and plating by sweating.
Peru: roads, centralized government; domestication of llama, and wool textiles; bronze.
Tropical Forest: manioc; hammock; long tembeta labret.
Southwest: storied masonry dwellings; kachina gods.
Plains: sun-dance; age-societies; perhaps tipi.
Southeast: representative confederacies; hominy.

(4) *Elements imported into America since the dawn of history in the old World.* The number of these that like rod armor, the composite bow, and the Magic Flight tale, are reasonably demonstrable as imported, is quite small. Many more traits have been suggested as diffused into America but remain contested. Some of these will be considered below. There is need for proceeding very conservatively in the expansion of this class. Alluring arguments can sometimes be advanced in favor of genetic connection between more or less parallel traits of the Old and New World: the Middle American balsa and Oceanic outrigger canoe as developments from the raft, for instance.[2] The weakness of such

[2] W. Schmidt, Zeitschrift für Ethnologie, XLV, 1098, 1913.

contentions, even where the resemblance seems real, lies in their leaving unconnected too much of the totality of the supposedly connected cultures. No domesticated plant or animal (except the dog) was transported from one hemisphere to the other before Columbus; nor, except on wild imagining, the metallurgical or ceramic arts; and the wheel, the screw, the plow, are lacking in America. With no diffusion in these fundamentals, evidence must be unusually complete before one can put faith in the diffusion of isolated items, especially when their occurrence is in parts of America remote from Asia.

The Northwest Coast

In the foregoing segregation of American civilization, the Northwest or North Pacific Coast has scarcely been mentioned. Yet it is not an area that is backward like the caribou tundra or the barren guanaco plains, too remote to have received higher elements of culture or too impoverished environmentally to accept them. The Pacific Coast of Canada is mild climatically, advantageously indented, forested, well provided with food, in fact was more densely populated than most other tracts north of Mexico. It lies no farther from Palenque and Tenochtitlan than does the Middle Atlantic region. Still, it is much less closely related in arts and institutions. Agriculture, pottery, the confederacy idea, the pyramid mound, the shield, are common to Mexico and the eastern woodland, lacking on the Northwest Coast. Instead there appear an intricate economic system, a peculiar art, an outstanding development of wood working. Evidently we are confronted here by a culture which differs from those of the Southwest and Plains not as these differ from the Southeast or Mackenzie but by another order. It is the thesis of the following pages to demonstrate that essentially Northwest Coast culture shares with American culture only basic universal elements presumably derived from Asia; that it lacks regularly the generic American elements that were developed on American soil and became diffused; and that what is specific in it is either a direct outgrowth on the spot from the relatively undifferentiated

primitive American culture or the result of later Old World influences.

The Primitive Stratum

The primitive stock of culture brought by the American race into the hemisphere is expectable, and occurs, unimpaired, in the Northwest. All the elements previously listed as characteristic of this stratum survive in the area. The one early art which has become lost is that of stone chipping. It is likely that grinding replaced this under the influence of controlling processes of wood working, much in the way that in Europe grinding techniques came to be applied to stone in the Neolithic after they had been evolved on bone and horn toward the end of the Palaeolithic.

Absence of Generic American Culture Traits

Of the elements named above as probably originating mainly in Middle America and constituting the bulk of American cultures generally, the majority are either foreign to the Northwest or of such different quality as to warrant doubt of their common origin.

Wholly lacking are the entire agricultural cluster of traits; pottery; masonry; the pyramid mound and temple or ritual structure; the altar; the priest as a community official; the communal religious society; the confederacy; the moccasin, sandal, and breechclout; the shield.

The following are either weakly represented in the Northwest, or stand in seeming rather than intrinsic parallel to the remainder of America:

Tobacco is little used in the Northwest, especially where the culture attained its peak. The characteristic consumption is by eating instead of smoking.

The sweat-house or men's house has importance only at the extreme south of the area. Elsewhere it is rare and suggests late and hesitatingly accepted intrusions, or possibly a lingering survival from former greater significance. The history of the sweat-house is far from clear; but it is widely diffused and characteristic in North America, and seems at least fairly ancient.

The ball headed club appears to be mainly replaced in the Northwest by an edged, sword-like one.

True axes with the blade in the plane of the handle are not Northwestern. Wedges and adzes are used instead.

Dugout boats seem originally to have been river craft in the Northwest and to have been made seagoing later. Bark canoes would therefore have been serviceable; and their non-use appears more likely to be the result of a cultural pattern than of floral necessity, since the tribes in the Northwestern hinterland find bark for their canoes. Geographical discontinuity points to independent origination of the wooden boat in the Northwest and in the Southeast and South America.

Offerings or sacrifices seem to be a less definite part of religion in the Northwest than in the remainder of America, at least among groups of approximately equal cultural level. Prayers too are spoken much less.

Finally, the Northwest is substantially without officials, chiefs, government, or political authority. This may seem a strange statement about a culture in which a class of chiefs or nobles is recognized as distinct from commoners. Yet the very breadth of this class of chiefs argues that it is something different, in the main, from a group of officials constituting part of a political mechanism. The concept of such a mechanism is what seems to be foreign to the Northwestern culture. It knows privileges and honors, but not office; a status of influence, but no constituted authority. This is clearest at the southern end of the area, among the Yurok and Hupa, where the spectacular developments of crest, name, seat, potlatch competition, visible insignia, are lacking, and the fundamentals of society therefore emerge nakedly. What counts among these people is possession; possession of property, of inherited or acquired use, of privilege, of ritual. Enough of such possessions, jealously maintained, give honor and influence and command. Custom law operates to guard and increase the possessions, prestige, and power of the wealthy. It gives them no office because there are no offices. A rich man is often more influential in fact, even at a distance from his dwelling, than among other Indians a chief would be in his own village.

But he represents his kinsmen, his personal and family friends, his beneficiaries and hangers on, just as a poorer man may represent only his own children. Neither is constituted by community action or sanction.

From this social foundation, politically so anarchical, it appears that the elaborate pseudo-political organization of groups like the Kwakiutl and Haida is derivable without much change in the spirit or direction of the institutions. One could not similarly derive the political status of the Iroquois, Creek, Omaha, Paiute, Zuñi, or Aztec. That is, the Northwest area, and it alone, is without even the germs of political organization.

Superficial American Parallels

There remain a number of traits in which the Northwest apparently equates with other areas, but whose distribution or internal evidence points to a separate origin. A typical case is the calendar.

The Mexican calendar is based on a day-count. North of Mexico nothing more refined than a moon-count within the year is attempted. Over most of the continent the moons are seasonally described—deer-rutting, leaves fall, cold, and so on—without attempt to correct the natural imperfection of twelve and a fraction lunations falling within the year. In two areas only,[3] the Southwest and Northwest, is an effort made to hold the reckoning true by starting a new count from each winter solstice. The Southwest may easily have acquired this first slight endeavor toward astronomical justification of time reckoning as an echo from Mexico. But if such a hint had traveled farther, to the Northwest, it should have left some traces in the intervening Californian and Plateau regions, and presumably would have penetrated also to areas of tolerable advancement like the Southern Plains and Southeast, which however do not relate the solstices with the moon-count. The distribution thus suggests an independent origin for the Northwest.

[3] Besides part of the Eskimo habitat, in which meteorological conditions are unusual. Leona Cope, Calendars of the Indians North of Mexico, Univ. Calif. Publ. Am. Arch. Ethn., XVI, 119–176, 1919.

Analysis confirms. The Southwestern system is really bisolstitial, sometimes repeating the descriptive names of the winter months most inappropriately in the second intersolstitial period of the year. The Northwest uses only the winter solstice, numbering the moons from one to twelve or thirteen instead of naming them. The plans are intrinsically dissimilar. Further, the Northwestern one can be related to the Northwestern propensity to value, rate, and deal in figures, as an economically minded people can hardly avoid doing.

Analogous arguments, which it would take too long to set forth in full, can be advanced in favor of the local origination of the following Northwestern traits:

Use of copper. Plates of the metal are carriers of fictitious credit values. The source of supply is distinctive.

Spinning and Weaving. Wissler has reviewed the salient comparative data, and Kissell made precise some of the Northwestern peculiarities.[4]

Religious societies. Beckwith, in a comparison of Northwestern societies with those of the Southwest, has shown their profound difference.[5] The Northwestern societies pattern after shamanism, adhering to the fundamental concept that admission is by individual supernatural experience. The Southwestern societies are under priests that become sacred by virtue of their office; and even where their purpose remains curative, their membership is filled by entrance into relation with ritual authority, not by dream or trance.

Age-grading in religious organization, of which a trace occurs among the Kwakiutl, seems unconnected with that of the northern Plains tribes.

Cannibalism in ritual.

The ceremonial fool. Boas has shown that his character in the Northwest has strong war associations. This may be true also of the ritual fools of the northern Plains. It does not hold of the fools or buffoons of the Southwest and California.

[4] Wissler, The American Indian, ch. III; Mary Lois Kissell, A New Type of Spinning in North America, Am. Anthr., n.s., XVIII, 264–270, 1916.

[5] Martha W. Beckwith, Dance Forms of the Moqui and Kwakiutl Indians, Fifteenth International Congress of Americanists, Quebec, II, 79–114, 1907.

The sib system. The basis of the Northwestern social scheme seems the marking of the inheritance of some badge or distinction. In the Southwest and Atlantic drainage regions, the basis is the division of the community into equivalent units, whose functions may be political, religious, or purely social. The Northwest as usual thinks of the individual line of descent and ownership of something; the Southwest and Southeast of the integration and balancing of the body politic. It may well be that a single sib movement spread far enough to reach the Northwest and was then secondarily though deeply made over to fit the prevalent cultural patterns there. But it is also conceivable that the origin of the whole Northwest Coast sib organization lies in the visible and namable signalization of possessed and therefore heritable prestiges, and that clans, moieties, exogamy, and totemism are only the secondary by-products of such tendencies. Which of these views is correct, only intensive study can hope to disclose. If the second alternative seem far fetched, there may be said in its behalf that it has apparently not been seriously considered in general works devoted to social institutions, and so would naturally impress as strange. But it appears as entertainable; and if substantiated it would explain admirably the facts of distribution and the peculiarities of the Northwest sib system, and leave only its "normalities" to be accounted for. The immediate problem of course is whether these normalities or the peculiarities outweigh in the Northwest; which is a question perhaps impossible of solution today because we are still accustomed to think of native social phenomena in categories chiefly of exogamy, unilaterality of descent, totemism, without much consideration whether these be fundamental and primary or superficial and secondary in each case of occurrence. At any rate there appears enough of a case to forbid outright equating or genetic affiliating of the Northwest Coast and other American sib organizations.

Elements of Local Origin

We come now to culture traits peculiar to the Northwest Coast, or at most extending beyond it to a few adjacent tribes. Two

distributions of arts recently worked out by Waterman[6] and Wissler[7] seem significant in this connection and will serve as an introduction to this part of the discussion. They are the plank house and a group of ornamental twining techniques, whose areas coincide almost exactly and are both surrounded by a much larger belt, extending from the Southwest into Asia, in which an equivalent element holds sway.

In the case of dwellings, the competitor of the plank house is the earth covered or semi-subterranean house, which has been traced with tolerable continuity as far east as Europe. It extends over most of the unfrozen portions of the northwestern part of North America except the Northwest Coast area proper. Here it is replaced by a true frame structure, mainly of split planks, often large, and built skilfully without saws, nails, or pegs. This frame house is without parallel in the western hemisphere. The eastern woodland bark house is scarcely even an approximation, its slabs not being structural but laid on a framework of poles. In the Northwest there is a timbered frame, no system of poles, and the planking is integral to the structure. The resemblance of the two types is therefore in appearance rather than mechanics or idea.

Now the distribution immediately suggests that the earth covered house came in from Asia, flowed down the coast and plateau of America as far as the borders of Mexico, and subsequently was replaced in the Northwest Coast area by the locally developed plank house. This interpretation is in accord with the plank house involving a higher degree of industrial constructive skill than the earth lodge; as well as with the unusual development of wood working of all sorts in the Northwest area. An alternative interpretation, that the earth lodge came into the area later but failed to shake the strongly established plank customs of the coastal tribes, is theoretically conceivable but seems less likely; and at any rate accepts the specific isolation of the coast area without diminution.

[6] T. T. Waterman and collaborators, Native Houses of Western North America, Indian Notes and Monographs, 1921.

[7] Wissler, The American Indian (1917), map fig. 17, p. 53.

Wissler's map of coiled basketry shows an area also beginning in Asia. (Its extension there remains to be determined, and leaves a conspicuous gap in present ethnological knowledge.) The trait proceeds into Alaska, down the mountain and plateau backbone of the continent into northernmost Mexico, and spills somewhat into the Plains. (There is a second area of coiling in Fuegia, Chile, Argentina and Peru, presenting an interesting and perhaps difficult problem that need not be considered here.) Again there is the marked-off Northwest Coast strip; very narrow, but uninterrupted from the Tlingit to the Wailaki, without any coiling. Wissler designates the area as one of twining; but the distinctive factor seems to be the use of special elements in the method of ornamenting the twining; overlay in California, wrapped twining in Washington, false embroidery in Alaska. These techniques are so local, both when considered separately and as a group, as to prevent their interpretation as an ancient set of inventions in comparison with the far stretched coiling process. Again one is thrown back upon the conclusion that the Northwestern trait originated on the spot and probably fairly late.

Here then are two specific indications of an active cultural focal center lying within the Northwest area and rather rigorously limited to it. There follows an impressive series of other elements, some of them of cultural weight and well known. These include first the so-called caste stratification of Northwestern society, the extensive development of slavery as a property institution, the prestige attaching to wealth, the potlatch and credit system—a formidable and distinctive economic complex. Second, there is the outstanding art and the almost obsessional use of wood—for cooking vessels for instance. Next, there are several special elements, such as consistent bare-footedness and the sail, if the latter was really aboriginal; besides such features as the edged club and other local equivalents for generic American traits that have already been mentioned. Then, it is only within the Northwest area proper and its immediate sphere of influences that the ritual or pattern number is five. Lastly, though here one can as yet speak but diffidently, the trend of other aesthetic activities than the plastic arts is rather unique on the North Pacific Coast.

In the remainder of North America, for instance, rhetorical and poetical figures strive after the effect of quality, of preciousness in particular; in the Northwest, they seek the effect of size, of surpassing quantity. And as regards songs, the passage from any central Californian tribe to a northwest Californian one, in other words across the southern periphery of the Northwest Coast area, brings one into a quite different world of music, with new rhythms, scales, tonal range, embroideries, and affects. These are only hints or impressions, to be sure; they cannot be more until painstaking and competent comparisons have been made.

Inferences

To sum up, the Northwest Coast area proper, the strip between the ocean and the first range of mountains, lacks many of the fundamentals of the generic American civilization which is continuously and intergradingly distributed, with differences either manifestly secondary or of degree rather than kind, from Canada to Patagonia. Where the Northwest seems to show elements resembling those of the generic American culture, these generally tend to analyze out so as to suggest a rather diverse character and therefore distinct origin. And lastly there are specific traits and deep-going groups of Northwestern traits which are without genuine parallel elsewhere in the hemisphere. In general it might be said that the Northwest Coast lacked the agriculture-pottery, the social-political, and the ritualistic culture clusters of the remainder of America and had developed two quite unique complexes of its own—those of wood working and plastic art, and of property and social ranking.

In short, it is doubtful whether Northwest culture has had much serious genetic connection with the remainder of American culture, other than in the presumptive common primitive Asiatic-American culture basis, and for certain secondary and minor inter-reactions. If we picture American civilization graphically in terms of a north-south section of its accumulated mass, the dominant feature is the high plateau of Middle America. From near the two ends of this plateau rise the pinnacles of Mexican and Peruvian civilization. Beyond, on each side, stretches a

descending series of terraces, or peneplain. Only near the extreme of one of these descents there rises a sharp peak, the Northwest, not to the height of the central massif, but approximately to the horizon of the first level below it, that of the Southwest; to which however it is nonconformable, their strata and constituents being of different origin.[8]

Surrounding the Northwest Coast lie a series of low-grade, neutrally colored cultures—those of the California-Great Basin, Plateau, and parts of the Mackenzie-Yukon and Eskimo areas—which evince some infection from the Northwest, a paucity of specific self-developments, and a diluted relationship to Middle America. They are cultural hinterlands, both toward the Northwest and, at several degrees removed, toward Mexico. It is evident that their low cultural intensity has been one condition of the rise of the Coast culture. Pressed against active neighboring cultures, the Northwest culture could scarcely have grown up with so great a measure of independence as it evinces.

Of these neighboring cultures, that of the Plateau—the interior drainages of the Columbia and Fraser—is undoubtedly most nearly related to the Coast culture. The relationship would seem to be in part one of secondary influencing; but also in part ancient and close. To a considerable extent the Plateau culture of today appears to reproduce the former basis of the Coast culture, which has evolved while the interior has more nearly stood still. The "Salmon food-area" of Wissler seems thus to be the parent of both the Coast and Plateau culture-areas; the maritime culture of the Kwakiutl and Tlingit to be a made-over river culture.

The archaeological evidences available corroborate. They show the former culture of the coast about the mouth of the Fraser to diverge from the present culture there in the direction

[8] This conclusion carries farther a view advanced in a discussion of "The Tribes of the Pacific Coast of North America," in Proceedings of the Nineteenth International Congress of Americanists, Washington, 385–410, 1917, in which the culture of the Pacific Coast generally was contrasted with that of the remainder of North America. That essay was descriptive; the present one is genetic in aim.

of an approximation to the culture that persists up the Fraser.[9] This relation may indicate a former Salishan flow down-stream; but it also suggests the specialization of what we know as the typical Coast culture, out of a soil like that of the recent culture of the interior Salish. One is tempted to go farther and see in the modern Nutka, Comox, and Kwakiutl culture a somewhat older stratum than in that of the Haida, Tsimshian, and Heiltsuk; to infer a shifting of the active focal point of the area northward from the Vancouver Island region to that of the Queen Charlotte Islands within a comparatively recent period. This would be in line with the demonstrations of Boas and Swanton as to the history of Northwestern ceremonies and matrilineal reckoning.

Asiatic Relations

The question inevitably arises whether the aloofness of Northwest culture from the current of generic American culture indicates its substantial origin in Asia, as its geographical position might suggest. On the whole it may be said that the evidence of specific culture traits is against Asiatic origins, that of underlying trends more favorable. Traits that are widely spread in Asia are here referred to, not local peculiarities of northeastern Siberia, which may well be due to a reflex current of culture out of America.

As regards specific traits, it is interesting that there are a number common to considerable areas in Asia and the tracts surrounding the Northwest but wanting in the Northwest proper. Such are coiled basketry and the semi-subterranean house already discussed, for which the Northwest has its particular equivalents. Of similar import are a number of traits distributed over considerable areas of northern North America, which may conceivably be of Asiatic origin and have in some cases been so interpreted. These include tailored clothing; the boot; the toboggan as an equivalent of the wooden snowshoe; the net snowshoe; the sled; the oil lamp; the underhung canoe; the skin boat; the skin tent on pole framework; birch-bark vessels; Alaskan pottery; the skin

[9] Harlan I. Smith, "Shellheaps of the Lower Fraser River," Mem. Am. Mus. Nat Hist., IV, no. 3.

hand drum or tambourine as a shaman's implement; transvestite customs.[10] With the partial exception of the net snowshoe, the tambourine drum, and perhaps berdachism, none of these elements seems to have obtained a serious foothold in the Northwest area proper.

Of specific traits common to the Northwest Coast and Asia, armor is the outstanding one to rise to mind. The sinew-backed bow, assuming it to be a modification of the Asiatic composite bow, extends into the Plains and Southwest, but is uncharacteristic of most of the Northwest Coast. The cedar-bark beater or shredder of the Coast carries a suggestion of the Polynesian tapa beater. But as neither form nor purpose is identical, a case of partial convergence seems likely. The same interpretation appears probable for the resemblance of form between the pear-shaped wedge maul of northwestern California and the taro pounder of Hawaii. The edged club of the Northwest Coast has approximate Polynesian parallels; but the limited number of shapes which a club can assume renders inference dubious. Melanesia and Peru would also call for linking on the score of clubs, if historic connection were thought of in such cases.

The Northwest Coast spindle is more suggestive. In the center of the area, the whorl is large enough for a flywheel, and the spindle is held upward; whereas the whorl of Mexico and Peru seems almost as much a button with the primary function of keeping the thread on the hand-twirled rod that is rested in a bowl, as it is a flywheel. As Wissler and Kissell have shown,[11] much of the spinning and weaving technique of the Northwest Coast is anomalous; a more searching comparative analysis is needed before we can be sure whether this textile art is of independent local origin, sprung from remote Middle American stimuli, or introduced from Asia. The latter possibility, however, seems to merit consideration.

The wearing of hats, as contrasted with head-ornaments, is Asiatic but un-American except in a region centering in the

[10] For several of these items, I am indebted to the suggestion of Dr. R. H. Lowie.

[11] Cf. note 4, ante.

Northwest Coast, and therefore probably significant of connection.

There may also be meaning in the fact that what is perhaps the most notable generic trend of Northwest Coast culture, its economic outlook and energy, finds definitely closer parallels in the eastern hemisphere than anywhere in America. Reference is to social values rather than to particular institutions such as the potlatch, whose specific form is obviously determined locally. Elsewhere in America a man's rating depends on his bravery, or generosity, or demonstration of relation with the supernatural world, or ritual office, or descent. Actually, of course, possession of property does tell. But the face of social consciousness seems resolutely set against the recognition of wealth as a primary factor making toward esteem and influence; and on the whole social consciousness is astonishingly successful. This is about equally true in the Arctic, the Woodland, the Plains, the Southwest, Mexico, and South America. Where societies grow large and complex, wealth may accompany lineage and office; but, ideally at least, as an incident. Distinction and power continue to inhere in the lineage or office.

The Old World is economically more realistic. In Melanesia, in primitive and advanced Indonesia, among the reindeer breeding Siberians, property possession of itself gives power and admitted prestige. It is only the higher civilizations, such as China, Japan, India, that have been able to develop and maintain an aristocracy solidly enough established to base its claims on learning or lineage or caste and to affect to despise wealth while preserving or acquiring it.

It is therefore not surprising that remarkable parallels sometimes crop out between the social systems of the Northwest Coast and peoples of the Old World. The Yurok of the northernmost California coast and the Ifugao of Luzon, for instance, are alike in owning many kinds of valuables, being exact in their property valuations, according power almost wholly in proportion to wealth, following precise legal systems of similar type, and yet remaining without political system or concept of a state. To think of the resemblances of the institutions of these two peoples as due to

specific historic contact would be absurd. The resemblances however become intelligible as products, on a comparable cultural level, of similar social trends or attitudes as regards wealth. This attitude may conceivably have been transmitted from Asia to the Northwest Coast.

All in all it would be premature to deny outright the possibility that the Northwest Coast culture has a more directly Asiatic basis than any other in the New World. Yet the case for an essentially Asiatic origin of this culture remains rather weaker than might be anticipated from the combined circumstances of geographical proximity to Asia and historic separateness from most of America. The cited indications of Asiatic influences which have penetrated adjoining parts of the New World but have passed by or glanced off the Northwest Coast are significant in this connection. In short, the outstanding characteristic of Northwest Coast culture is its seeming comparative aloofness from both Asia and America. How far this apparent isolation may yet resolve into remote and subtle genetic relations in either or both directions, or confirm into a history of unusually independent development, is for future study to unfold.

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THE PALAEOLITHIC PERIOD IN SIBERIA: CONTRIBUTIONS TO THE PREHISTORY OF THE YENISEI REGION[1]

By GERO VON MERHART

Introduction

FOR the first information concerning Siberian discoveries of palaeolithic artifacts associated with fossil animal remains in loess, we are indebted to I. T. Savenkov. He collected a considerable quantity of stone implements, several bone implements, and numerous complete and fragmentary bones at the foot of Afontova mountain on the southwest border of the municipality of Krasnoyarsk.. According to M. Tscherskij, the bones include the following: *Elephas primigenius*, *Rhinoceros tichorhinus*, *Bos primigenius*, *Bos priscus*, *Equus caballus*, *Rangifer tarandus*, *Cervidae* (*alces? euryceros? canadensis?*), and *Canis spec.* The greater part of the stone implements are chipped on one side only and are comparable with the Mousterian forms of western Europe, including even typical points and side scrapers. Only a few of the implements are chipped on both sides after the Chellean and more especially the Acheulian fashion. The relic-bearing horizon lies near the base of a loess deposit, which, in turn, rests on sands and is covered by loam and humus. A rubble deposit underlies the whole sequence complex.

This important discovery was first noted briefly in the transactions of the East Siberian Section of the Russian Geographical Society;[2] later in a somewhat more detailed paper by Savenkov before a local meeting (1891) of medical men;[3] and finally in an

[1] Translated from the original by George Grant MacCurdy and published here for the first time in any language.

[2] I. T. Savenkov: "Contributions to the archaeology of the middle course of the Yenisei," Proceedings of the East Siberian Section of the Russian Geographical Society, XVII, 3-4, 1886.

[3] I. T. Savenkov: "On the palaeolithic epoch in the vicinity of Krasnoyarsk in the Yenisei Government," Appendix to the minutes of the Society of Physicians of the Government of Yenisei, Krasnoyarsk, 1892.

almost verbatim French abstract by Savenkov before the International Congress of Prehistoric Anthropology and Archaeology in Moscow.[4] Little notice was taken of this important paper except by Baron de Baye, who, after his return to France, reported Savenkov's discovery at a meeting of the Academy of Sciences.[5] In 1896, De Baye visited the Yenisei region and verified Savenkov's discovery on the spot. His report which followed, together with the preceding citations, gives a sufficiently clear presentation of what was known about the Afontova site.[6]

Judging from the presence of bone implements, both Savenkov and De Baye concluded that Afontova should be attributed to the late palaeolithic, particularly to the Magdalenian epoch, an observation which was later lost sight of. The implements in question are spear points (up to 20.0 cm. in length, and from 1.5 to 2.0 cm. in breadth—the former worked thinner, the latter thicker, up to 1.0 cm.), oval in cross section with sharp, incised grooves (deep or shallow) mostly on the narrow side only. The base is flattened either on one side or on both for purposes of hafting. We shall make further reference to these bone points.

Further than this there are no reports[7] in the literature concerning this site, which in certain general works is ascribed to the early palaeolithic.[8] That Afontova is not an isloated site was

[4] I. T. Savenkov: "Sur les restes de l'époque paléolithique dans les environs de Krasnoiarsk (Gouv. de Jenisseisk, Sibérie)," Congr. intern. d'anthr. et d'arch. préhs., Moscou, 1892, tome I.

[5] Baron de Baye: "Rapport sur les découvertes faites par M. Savenkov dans la Sibérie orientale," Séance du 27 février 1893, Paris, 1894.

[6] Baron de Baye et Th. Volkov: "Le gisement paléolithique d'Aphontova-Gora près de Krasnoiarsk (Russie d'Asie)," L'Anthropologie, tome X, p. 172, Paris, 1899. (Contains, besides the first-cited work of De Baye, the only pictures of stone implements from Afontova.)

[7] Savenkov: "On the culture remains left by man contemporary with the mammoth, along the shores of the Yenisei," Minutes of the joint meeting of the Warsaw Society of Naturalists, VII, 1896–97.

[8] G. et A. de Mortillet: Le Préhistorique, 2d édit., 594, 624.

Obermaier: Der Mensch der Vorzeit, 174. (It is curious that the mention of Savenkov as the first discoverer of the palaeolithic in northern Asia, fully brought out by Obermaier in the original, and correctly so, has been omitted in the Russian translation of this work. In justice to D. M. Anutschin, author of the preface of the Russian edition, as well as L. I. Sternberg, author of Savenkov's necrology in the Contributions of the Museum for Anthropology and Ethnography of the Academy of Sciences, III,

already mentioned by De Baye, who found both stone implements and fossil animal remains in loess deposits at Ladeiki on the right bank of the Yenisei, 12 kilometers east of Afontova, and in Perevosnaja, midway between these two points and likewise on the right bank (*Le gisement*, etc., p. 8). So far as the author knows, no determination of the animal bones is recorded in the literature. The industry was thought to be the same as that found at Afontova. Moreover, in a later work on the Stone Age in the Minussinsk region, Savenkov mentions two stone implements from Bateni and Isych mountain.[9] The first was classed as a discoidal cleaver, the second as a side scraper of the early palaeolithic type. The circumstances of the discovery of these two specimens are not all that could be desired, but Savenkov believed that he saw in them evidence of the presence of palaeolithic man in the Minussinsk region.

This is all that the literature reveals concerning the palaeolithic period in the Yenisei region. Savenkov, who gave his collection to the Petrograd Academy of Sciences, later did some further excavating at Afontova. A summary of his investigations has not appeared, although it is thought to have been in manuscript form at the time of his death.[10]

New Discoveries

In the archaeological section of the Museum of the Yenisei region in Krasnoyarsk, the author found several series of palaeolithic objects which fortunately supplement our knowledge of the palaeolithic period in the Yenisei region. They come from several well-known points, including Afontova,[11] Peresselentscheskij

1916, it must be admitted that the blame for this unfortunate oversight rests with the translator.)

Gorodzov: Prehistoric Archaeology, Moscow, 1908. (Gorodzov spoke very cautiously. He expressed a belief that the station belonged to an early stage of the late palaeolithic and was not convinced of the association of industrial remains with remains of mammoth fauna.)

[9] I. T. Savenkov: "The Palaeolithic Age in the Minussinsk Region," Materials for the Archaeology of the Eastern Governments of Russia, part II, Moscow, 1897.

[10] I. T. Savenkov died a true soldier of science, a few days after the completion of his last excavation at Afontova, which was partially directed from his sick bed in a tent.

[11] Collection of G. P. Sosnovski, A. I. Tugarinov, A. N. Sobolev.

Point (Perevosnaja),[12] Ladeiki,[13] and Bateni;[14] also from Woennyi village,[15] and Kirpitschnye Sarai (brick barns)[16] which are new. With the exception of Bateni, all the sites mentioned lie within the vicinity of Krasnoyarsk. Besides, as a representative of the Krasnoyarsk Museum, the author carried on a series of excavations during the summer of 1920, which acquainted him with the foregoing sites and led to the location of new ones.[17] The new stations are Busunova, Lepjoschkina, and Ajoschka, in each of which culture remains were found in situ; Kokorewa and Tes on the Tuba, in which it may be said that the presence of palaeolithic horizons is highly probable. Although the region covered was great, the summer period very short, and much time consumed in reconnaissance, especially of the later prehistoric sites, the results were sufficient to justify a publication of the new stations, which supplement the old and in addition afford the first undoubted evidence bearing on the palaeolithic period in the southern part of the Yenisei government.

The Geology of the Site

Savenkov gives the following section for Afontova, beginning at the top: Humus; rich yellowish-brown loess loam (exploited); whitish loam; gradual transition to a sandy layer containing mineral salts (worthless for brick-making); sandy, silty layer; layers of sand; gravel; rubble. The loess contains *Pupa*, *Helix*, and *Succinea* and is obviously of aeolian origin. De Baye declared the loess to be fluviatile, but without any evidence in support thereof. According to him the section is as follows: (Humus); loess, in which thin layers of fine sand almost conformable with the declivity are intercalated at irregular intervals; rubble. Both investigators are agreed in this, that the relic-bearing deposit which Savenkov placed at the base of the loess-

[12] Collection of S. M. Sergejev, A. N. Sobolev.
[13] Collection of A. P. Jermolaev.
[14] Ibid.
[15] Found by A. P. Jermolaev and A. I. Tugarinov.
[16] Found by G. P. Sosnovski.
[17] G. P. Sosnovski, assistant at the Museum, took part in these excursions.

loam, and De Baye at the base of a loess complex, is not conformable with the slope of the declivity.

At present it is difficult, since the exploitation has been discontinued, to obtain a well-defined section. In addition, railroad embankments and modern dumps have increased the difficulty of gaining access to the mountain, so that excavations on a large scale only can give definite results. The extent of the relic-bearing deposit, or better still the distribution of the lenticular culture deposits, is wide spread—more than 2 km. are to be taken into account—so that the study of single small sections for the reconstruction of the stratigraphy, especially of the relic-bearing deposits, does not seem to suffice. Rubble and gravel are nowhere at present laid bare, but they are recognizable as underlying deposits by a continuation of the section as far as the bank of the Yenisei. The deepest underlying deposit within a limited radius of exploration is formed of fine sands, at places with the intercalation of thinner layers of fine gravels. With very gradual transition there follow from the bottom up, first sandy, then loamy loess of a yellowish-brown color, 1.5 to 5.0 m. thick, characterized by typical fossils, a tendency toward perpendicular crumbling, and porosity. Black humus forms the last of the series of deposits. Thus it may be seen that Savenkov's section is essentially correct in so far as the culture deposits in the deeper portion of the true loess are concerned.

To be sure the culture horizon rises in places almost to the humus, but the subsequent natural denudation of the loess complex must account for this phenomenon since the distance to the underlying sands remains approximately the same. Moreover, the original deposition is undoubtedly disturbed in places, especially at the south end of the palaeolithic station, that is, near the Yenisei where sands are shifted between loess deposits, and pockets and lenticular formations of gravel, sharply defined against the underlying loess, bear testimony to periodic and temporary flooding by water—the whole complex apparently having been shifted from its earlier position. As was noted by De Baye, the floodings which resulted in the predominant gravel bedding parallel to the slope might have been caused by occa-

sional excesses of surface water on the mountain. No stratigraphic significance can be attached to these lenticular gravel deposits so far as can be observed. The nature of the disturbance of the entire complex could not be determined, but it is certain that sands, gravel, and loess in the southern portion sometimes dip into the mountain, often at such an angle that an original deposit in this position seems out of the question (Fig. 1).

The relic-bearing horizon is readily recognizable in many places by its grayish-black color and the presence of charcoal and stone and bone implements. It is never more than a few centimeters in thickness. In other places it is suggested only

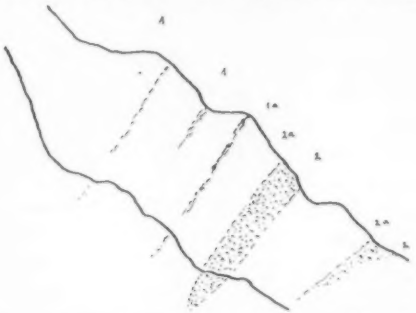


FIG. 1.—Afontova mountain, southeast slope. 1, loess with various narrow bands indicating culture remains; 1a, darker culture stains, 15 cm.; 2, fine sterile sand, lenticular masses, 27–0 cm.; 2a, sandy loess with scattering culture remains above, 40 cm., below, 55 cm.

through the soft brownish color of the lighter loess, and in the disturbed portions practically all trace of industrial remains have been obliterated. Nevertheless Afontova is, at the present time, one of the best points for the stratigraphic study of the palaeolithic period in the Yenisei region.

Peresselentscheskij Point.—Just to the west of the group of buildings situated on the first terrace of the right bank of the Yenisei, and directly on the highway which leads from here to the ferry (for Krasnoyarsk), the following section is visible: Beginning at the top, dune sand (varying in thickness); dark, relic-bearing level of the Iron Age, fading out below (ca. 60 cm.); gradual transition to fine sand (ca. 4.0 m.); clearly defined

transition from sandy loess to yellow loess (*Succinea*) (ca. 1.0 m.); rubble (3.0 to 4.0 m.) to normal water level. The culture remains lie in the pure loess, near the rubble (Fig. 2).

Near *Ladeiki* lenticular deposits of loess, limited in extent and lying directly on the rubble, are visible not only at the west end of the parish, but also to the southeast in the big valley which is traversed by the way to the churchyard. Dune sands, so far as they are present, form the underlying deposit. The only signs of a culture level were retouched chips, nuclei, etc., in and near the surface of the loess.

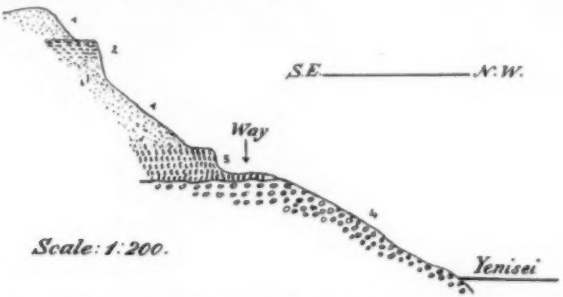


FIG. 2.—Section at Peresselentscheskij Point. 1, dune sand; 2, culture-bearing level of the Iron Age; 3, loess; 4, rubble.

In the village of *Woennyi* on the left bank of the river, almost directly opposite Ladeiki, the following complex of deposits is to be seen: Humus, camp site of the late iron age (ca. 0.5 m.); loess; sandy loess; sand (6-7 m.); transition layer of mixed sand and gravel; pure gravel and rubble (2 m.) unconformable; palaeozoic marl. The foot of the complex is covered by the rubble deposit of the river bed. Its erosion surface lies approximately 6-8 m. above the normal water level. The culture level, 4 m. below the surface, is practically nothing but a mere seam, recognizable by the presence of charcoal, heaps of broken bones, and various industrial remains (Fig. 3).

These sections are supplemented by the geology of *Gremiatschi*, one of the tributaries of the Yenisei west of Afontova mountain, and of *Kirpitschnye Sarai* (brick barns) northeast of Afontova. The deep ravine cut in the old terrace of the southeast slope

of the Gremiatschi mountain, approximately northwest-southeast, that is to say at right angles to the prevailing winds, is completely filled by a thick layer of loess in its upper part, in which the brook has cut a deep, new gorge. Sosnovski found here some undoubted industrial rejects, although no distinct culture deposits. The second site forms, properly speaking, only the northern continuation of Afontova and is recognizable at the

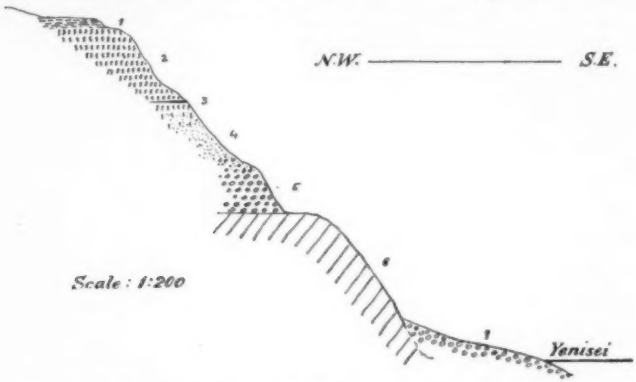


FIG. 3.—Section east of Woennyi village. 1, culture-bearing level of the late Iron Age; 2, loess; 3, palaeolithic relic-bearing level; 4, sand; 5, ancient rubble; 6, palaeozoic marl; 7, recent rubble.

foot of the slope which drops to the Katscha valley, by thick loess deposits under the surface layer. The underlying deposit is not visible. A thin, often interrupted culture level, or, more properly speaking, a series of stains and charcoal fragments, yielded a typical industry and reject material.

If one takes into consideration the position of the sites and their sections as a whole, it is easily seen that the loess thins out the farther it is from the westerly mountain slopes or the adjacent river banks. The logical explanation of this would be that strong dust storms in the prevailing west-east or south-west-northeast direction deposited their load of material in the lee of the slopes facing the east, whereby there resulted the complete filling up of the Gremiatschi ravine, the comparatively thick accumulation by Afontova mountain, Kirpitschnye

Sarai, and Woennyi village; with this is linked up an equally thick deposit of loess on the west slope of the Katscha valley, north of the mouth of the Bugatsch. Peresselentscheskij Point and Ladeiki, the deeper-lying sites of the right bank, are spurs of this wind-cone deposit of débris. By the reducing action of the lee, and accordingly, increased transport power of the wind, there resulted only relatively insignificant loess deposits which, moreover, were decreased later through deflation, and finally persisted only where the moving sand dunes of a later geologic phase protected them (Figs. 4 and 5).

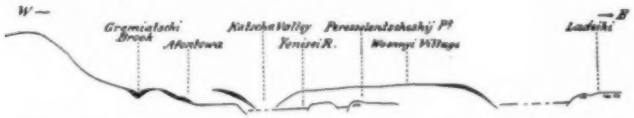


FIG. 4.—A schematic composite of sections of the Yenisei valley near Krasnoyarsk. The loess deposits are in shading.

Kokorewa lies on the left bank of the river, about 225 km. above Krasnoyarsk.[18] At the northeastern end of the place, the steep bank of the Yenisei presents the following section: Village dump material; red loam (presumably weathered material from the nearby sand and marl slate; loess (with *Succinea*, *Pupa*, and *Helix*); sand; rubble. The entire height of the terrace amounts to about 8 m. The base of the loess lies some 5 m. above water level. A few decimeters above the base of the loess one can see dark stains with broken bones. At one place there was a loose breccia several centimeters thick and more than a meter long, composed of broken and burned bones. No artifacts were found.

The same section occurs 10 km. to the south, at the village of *Ajoschka*, on the left bank of the Yenisei. Here were found, not only broken bones, but also rejects of stone industry and a retouched flake which lay somewhat nearer the upper limit of the pure loess, in a zone colored by red loam.

Leaving out of account for the moment the next stations up the river, Bateni and Lepjoschkina (265 km. from Krasnoyarsk), we come to the *Busunova* section, 350 km. from Kras-

[18] The distances are given by the verst measures of the pilot map of the Yenisei channel.

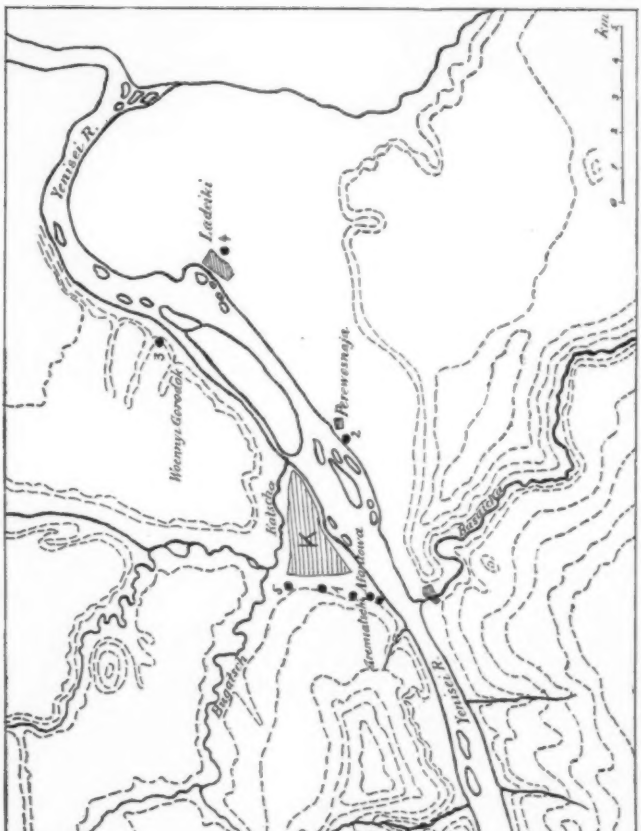


FIG. 5.—Environs of Krasnoyarsk (after Savenkov). 1, Afontova mountain; 2, Peresselentscheskij Point; 3, Woennyi Gorodok; 4, Ladeiki; 5, Kirpitschnye Sarai; K, Krasnoyarsk.

noyarsk on the right bank (Fig. 6). This section is north of Kosakenstaniza in the first deep ravine, near its opening into the river. It shows the following stratigraphic sequence, beginning at the top: Dune sand (1.0 m.); relic-bearing level of the iron age in dune sand (1.0 m.); structureless fine gray sand (2.0 m.); yellow loess (no shells found) with veins of rust, scattered bits of charcoal, bones, and stone chips (3.0 m.); sandy loess with two only slightly developed relic-bearing horizons (1.0 m.); stratified sands (4.0 m.); rubble.

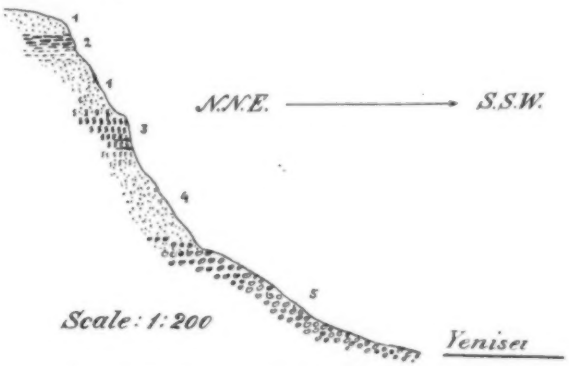


FIG. 6.—Section near Busunova. 1, dune sand; 2, relic-bearing level of the Iron Age; 3, loess; 4, fluvial sands; 5, rubble.

Tes on the Tuba, 50 km. above the point where the Tuba empties into the Yenisei, is built on the youngest terrace of the river. South of the village, beginning at the foot of the Georgi mountain, the border of an old terrace runs in an easterly direction approximately parallel with the river. Outside of the eastern hedge, a sand pit reveals the following section, beginning at the top: Dune sand with intercalated dark horizon representing a former surface level (2 m.); relic-bearing horizon of the Iron Age in like sand (1 m.); gray, structureless sand (2 m.); loess (with *Succinea*, *Pupa*, and *Helix*) with flecks of rust and tubular concretions (ca. 0.15 m.); cross-bedded yellow sands observable to a depth of 2 m. (with *Succinea* and flat-shelled snails). The underlying deposit does not outcrop, but, judging from the

FIG. 5.—Environs of Krasnoyarsk (after Savenkov). 1, Afontova mountain; 2, Peresselentscheskij Point; 3, Woennyi Gorodok; 4, Ladeiki; 5, Kirpitschnye Sarai; K, Krasnoyarsk.

structure of the deeper terrace, presumably consists for the most part of rubble. Nearby, east of the foot of Georgi mountain, the loess deposit outcrops in like position under the dune sand. No palaeolithic remains were found, but material preserved in the Minussinsk Museum, and a splendid specimen in the Museum of the Academy of Science in Petrograd (282[86]) indicate that this was a palaeolithic site. According to the report of Savenkov, quoted by G. Handelsmann, this site must have been in the last-named western part of the dunes, and is either exhausted or covered by the threshing floors of the village.

The geological discovery in *Bateni* is less clear on these four points. Here also the dune sands trail in considerable thickness from the village toward north-northwest, concurrent with the declivity. The slope, very short and steep by the village, is in places elevated above the terrace level by the superimposed dunes. On top, over wider stretches, it is destroyed and flattened by wind erosion and disappears in wind pots with small hummocks and continues with little fall to the river level. Beginning at the top, the section when complete is as follows: Blown sand (including a dark layer ca. 0.4 m. thick, with Iron-Age remains; reddish brown deposit consisting of sandy loam (0.03 m.); sand; gravel and rubble. At one place there occurred, directly above the reddish brown deposit, a well-defined dark layer in the sand containing fragments of charcoal (0.03 m.). It was no richer in culture remains, however, than its underlying deposits. The reddish yellow layer became so hard when exposed to the sun that one could scarcely break it between the hands.

The remains of a relatively abundant stone industry lie for the most part on the rubble uncovered by the wind, mixed with relics of the Iron-Age horizon. On account of a bright glistening patina the atypic stone rejects are easily distinguishable from the stone industry of the Iron Age. As far as could be observed the palaeolithic implements occur only below or directly above the reddish brown deposit, while the later culture remains are scattered over the entire clearing as far as the upper relic-bearing deposit. Therefore the sandy loam deposit appears to bear a relation to the palaeolithic station.

Lepjoschkina, or Malaja Irdsha, lies only a short distance above Bateni on the opposite side of the Yenisei, in the valley of the Osinovka brook. On the right side of the brook, a small rocky summit rises to the height of the hamlet, out of the slope that ascends to the Irdsha. East of this, at the upper end of a ravine, appears a dark stony deposit, possibly the weathered remains of a rocky bank. This deposit is covered by fine sands which trail upward on the slope looking to the southeast, and contain, near the surface, an Iron-Age camp site. At its lower margin, almost immediately over the stony deposit, there was found in an undisturbed condition a small Stone-Age workshop, the middle of which was marked by a hearth about a meter in diameter. Outside of the black hearth the relic-bearing layer is distinguishable only by very slight dark patches and by implements lying in one horizon. On account of the finding of a single nucleus, it is possible that the culture layer ascends with the slope and that in the corresponding level yet other hearths might come to light.

It is easy to compare Kokorewa, Ajoschka, and Busunova by means of their sections. Everywhere sands (variable in thickness) rest on the gravel and rubble in which the present river bed is cut; above, loess, which in the transition is mixed with the sands, nowhere reaching any considerable thickness; and finally, depending on local conditions, dune sands or decomposed material, near elevations. The same is true of Bateni if one regards the reddish brown deposit as altered loess which, upon closer investigation of the very extensive outcrop, may perhaps be revealed in greater thickness. Tes also, lying some distance from the Yenisei valley, corresponds in its section too distinctly to the stations of the latter not to be classed with them and the whole regarded as the result of a homogeneous and contemporaneous geologic process. The section of Peresselentscheskij Point likewise, even to the absence of sands between loess and rubble, is the equivalent throughout of Tes in position and composition, and connects the southern stations with those in the vicinity of Krasnoyarsk in the sense that the latter also are to be regarded as belonging to the same geologic period and attributed to the same climatic conditions.

The Quaternary of the Yenisei region and the transition to the present time still await their investigators. To place our sections in relation with a system of diluvial or, more properly speaking, post-diluvial phenomena, is therefore not yet possible and the effort to distinguish the geologic process which our sections indicate must undoubtedly bear a hypothetical stamp.

The loess is everywhere to be considered as an aeolian deposit. It includes the known shells, has undisturbed camp sites, lacks deposition in definite layers, belongs sometimes to the higher, sometimes to the lower river terrace, i.e., the only loess layer—for nowhere does one find two loess deposits in the same section—and is deposited according to the topography of the place, on the higher as well as on the lower terraces. There must have been therefore an extreme continental climate at the beginning of the geologic present, followed by the development of a steppe phase. The Yenisei was already at work on the building of the last terrace, and even if perhaps more turbulent, occupied approximately its present bed. In this phase there was at all events a considerable reduction in the river current. Confining itself to a very narrow channel, the Yenisei left a great part of its bed dry. In so far as the last accumulation had deposited sands on the surface, these were put into motion by the storms as the transition formation of sand loess between pure loess and river sand proves.

The deposition of loess continued in part at levels which today are covered by high water, at that time however not flooded, as the undisturbed camp sites testify. New loess covered hearths and other culture remains, and after the disappearance of the loess phase sand dunes overwhelmed the old land surface. With the advent of a more humid climate, the current of the Yenisei attained sufficient volume once more to invade and clear out the partly bare stream bed to such an extent that the present aspect was brought about by the cutting into the sections of loess deposits containing palaeolithic stations partly occurring high up on the steep bank, partly under the level of the last terrace. Doubtless the immeasurably greater volume of water in comparison to that of the steppe period, has reached and

carried away much palaeolithic material long after it was embedded in the deposit.

Fauna

Tscherskij's fauna list includes the entire fauna of the loess of Afontova so far as it was known in 1885. A complete list of fauna containing all the species in the culture deposit and those found by Savenkov in his excavations is, as already mentioned, not known in the literature.

Savenkov's observation that the reindeer is predominant among the faunal remains has been verified by all subsequent prospectings. The deposit contains in places whole nests composed of broken and frequently burned reindeer bones. Cranial fragments are likewise comparatively abundant and belong, as do the other bones, to a large number of young individuals. Besides, more recently, *Cervus megaceros* and *Antilopa saiga* have been identified.[19] Of the former a basal portion of an antler (26 cm. in circumference) with a piece of the skull attached is to be noted. The antler shaft and branches were broken off after having first been notched all around. *Bison priscus* and *Equus caballus* complete the number of those game animals which at present can be declared to have served as food for the loess dwellers of Afontova.

We shall next take up the question of two objects carved from ivory. Fragments of tusks have often been found; near Woennyi village there came to light in the relic-bearing layer the end of a tusk (70 cm. long) split lengthwise. The appearance of the mammoth in the foregoing list of fauna is not strange, so that it might appear rather presumptuous to pronounce the ivory as collected subfossil material instead of simply including *Elephas primigenius* in the list of fauna. That the Afontova loess contains mammoth as well as *Rhinoceros tichorhinus* was determined by Tscherskij, and there is not the slightest basis for assuming that the animal remains in the loess are derived from some other locality. This must be insisted upon all the more since the

[19] The new material has been determined by Alexander M. Sobolev.

possibility of a displacement is not out of the question, as is indicated by the disturbed deposits.

Thus we come to the conclusion that Tscherskij's fauna list is essentially valid as a list of animals contemporaneous with man, so far as one is justified in assuming for all influences of the loess in principal a primary deposition and thus geologic contemporaneity; but, in addition, the relic-bearing deposit lies in a deeper part of the loess.

The hearth of Peresselentscheskij Point yielded four examples of *Rangifer tarandus*, and one example each of *Cervus capreolus* and *Bison priscus*. From the limited faunal material of the southern sites, *Bison priscus* was found at Lepjoschkina and *Bos spec. nov.* at Busunova. The latter form, according to a communication from A. Sobolev, is closely related to *Bos* of the present, but still retains certain traces of kinship with *Bos priscus*. Assuming the same age for all loess deposits as we sought to do in the remarks on the geology of the sites, we can thus specify the following animals as associated fauna of the palaeolithic period in the Yenisei valley:

Rangifer tarandus (identified by Tscherskij and Sobolev) abundant.
Equus caballus (Tsch. and Sob.) fairly plentiful.
Bison priscus (Tsch. and Sob.) fairly plentiful.
Bos primigenius (Tsch.) not so plentiful.
Bos spec. nov. (Sob.) at present known only in Gremiatschi and Busunova.
Cervus megaceros (Sob.) not so plentiful.
Antilopa saiga (Sob.) one example.
Elephas primigenius (Tsch. and Sob.) rare.
Rhinoceros tichorhinus (Tsch. and Sob.) rare.
Canis spec. (Tsch.)

Such a fauna corresponds very well in composition and quantitative participation of the individual representatives with a steppe phase, with probably here and there forest boundaries, and can for our region be declared late diluvial.

Culture Remains

The materials testifying to the presence of the loess dwellers are composed in part, as already stated, of undisturbed culture deposits and in part of surface finds, or specimens encountered in doubtful locations. A portion of the finds from Afontova

belong to a well-defined culture level which is 2-6 cm. in thickness, of distinct gray color, and marked by charcoal fragments scattered throughout the loess. Of a similar character, but more limited, is the relic-bearing horizon of Woennyi village. Near Peresselentscheskij Point, S. Sergejev excavated a hearth marked by burnt stones, and his material dug up in the neighborhood was taken from an undoubted undisturbed culture level, as was also the case of a small hearth at Lepjoschkina. In Busunova the best pieces were collected from the refuse, but the rejects made of the same stone found in the deposit permit the conclusion to be drawn with even greater certainty that the artifacts came from the culture deposit. For the artifacts from the southern part of Afontova as well as the sparse finds from Ajoschkina, one must concede that the deposit to which they belong, even if geologically well-determined, seems doubtful yet in detail. In Kirpitschnye Sarai the relic-bearing deposit is visible but very indistinct because disturbed. Only isolated specimens sticking in the loess could be recovered from Ladeiki. The circumstances surrounding the finds at Bateni were noted above.

We choose as a starting point the series gathered by Sergejev at Peresselentscheskij Point which affords a closed culture complex of easily observable position, and then pass o the description of the specimens illustrated.

Fig. 7, No. 1.—Crude cleaver formed from a river pebble of green jasper. The face represented by the principal surface of fracture is flatter than its opposite and is partially covered by the original pebble surface. The cutting edge forms a zigzag margin around three-fourths of the contour. The general shape and retouching combine to fit the implement for use in the left hand rather than the right. The edge is characterized by alternate reverse chipping, there being few stretches where the retouching is on both sides rather than on one side only.

No. 2.—Grayish-white quartz side scraper, the under face simply a single unretouched surface of fracture. The back is adapted to fit the right hand. The upper irregular face is in part covered by the original surface of the block from which the implement was made, and is carefully retouched to an edge

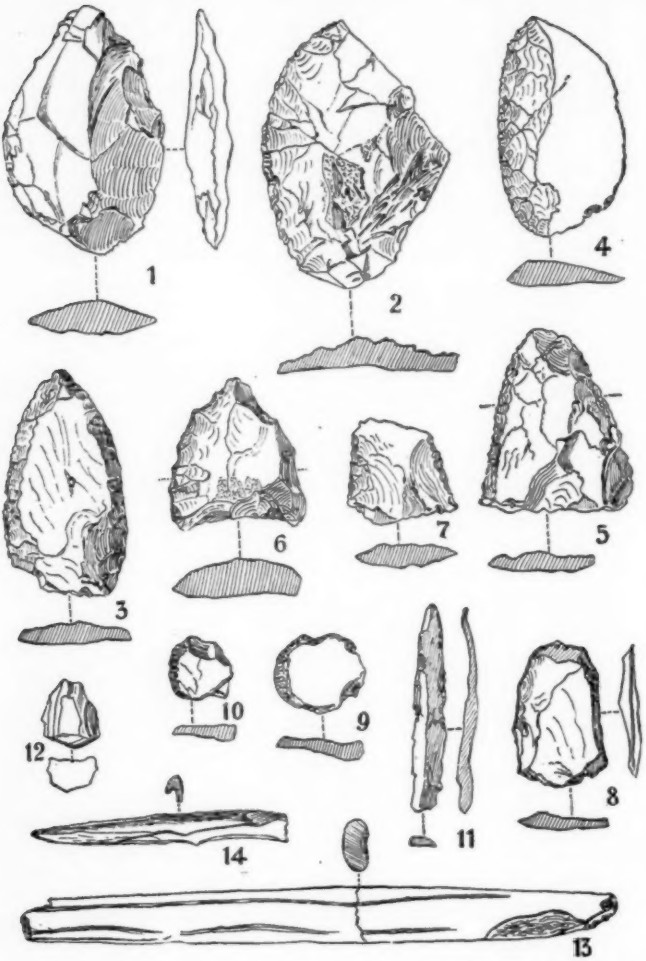


FIG. 7.—Stone and bone implements from Peresselentscheskij Point. Nos. 1-12 are of stone; nos. 13 and 14 are of bone. About ½.

gracefully curved in outline and running along one margin for the entire length of the specimen.

No. 3.—Pointed implement of stone similar to No. 2. The under face is formed by a single surface of fracture and is not retouched except for a single chip near the basal angle. The upper face is flattened by the removal of a few flakes only. The entire margin is retouched to a steep slope except for the base which is adapted to the hand by the removal of a few sharp corners. The tip of the point is broken.

No. 4.—Side scraper of dark green hornstone with under face formed by a single surface of fracture showing percussion rings. The unworked portion of the upper face consists of the original pebble surface. The well-directed primary and secondary chipping has produced a fine scraping or cutting edge along one side of the specimen for its entire length.

No. 5.—Roughly pointed implement of dark gray hornstone made from a flat flake. The under face is unworked—the upper face is roughly reduced. The two margins are retouched.

No. 6.—A roughly pointed triangular implement of stone similar to that employed in Nos. 2 and 3. The base is thick. The under face is an unworked surface of fracture. The retouching has not been successful, due in part to the mode of fracture of the material. The lightly retouched concave base indicates that this portion might have been used as a hollow scraper.

No. 7.—Implement of the same material as No. 6. A flake adapted for threefold use: the margin is retouched to form scraping edges; the blunt end is steeply retouched on one side (hidden) so that the implement may be used as a scratcher (end scraper).

No. 8.—A broad thin blade of the same material as No.7. Marks of utilization are visible along the under face. The upper face is retouched along the margins and for part of the way so carefully as to form a cutting edge.

No. 9.—Implement of the same material as the foregoing. Both faces are formed by a single surface of fracture. Half of the surrounding margin is carefully retouched to form a sort of duckbill.

No. 10.—Scratcher of the same type and material as No. 9, only not so carefully worked.

No. 11.—Pointed, blade-like flake with the back adapted to the left hand. The edge shows evidences of utilization.

No. 12.—A small nucleus of the same material as Nos. 2, 3, 6-10.

No. 13.—Fragment of a bone spear point made from a comparatively large bone split longitudinally. The margins are carefully smoothed by polishing, leaving an oval concavo-convex profile in section. From the broken point there run four artificial, longitudinal grooves. The two which are visible in the illustration are shallow.

No. 14.—Bone awl showing the marrow canal at the base. Traces of a cutting and scraping implement are visible at the point.

(In addition to the implements illustrated in Fig. 7, Von Merhart mentions some forty others, some complete and others fragmentary; also about three hundred and fifty rejects from a single culture horizon and from a single hearth comprising an area of only a few square meters. This series affords a very fine glimpse of the loess dwellers' inventory of tools and weapons.) With the exception of Nos. 1, 4, 5, and 11 all of the stone implements illustrated are of the same material, very probably derived from a single unworked lump of raw material. This stone, which in fracture stands next to quartz, was abundantly turned to the best account because of the apparently complete lack of flint in the Yenisei region. Especially scrapers and scratchers of the type shown in Nos. 9 and 10 which bear remarkably fine, steep retouches, then flat retouched scrapers, and finally blades—all these of small size—were manufactured here from suitable material, which also recurs among the rejects. Often formless splinters bear a few marks of intensive utilization, which indicates frequent, temporary use of stone chips. Without exception only the margin of the upper face was retouched in all the implements made of this stone, while the under face was formed by a single surface of fracture, often with a fine bulb of percussion. The same method of procedure is seen in the larger examples,

STONE IMPLEMENTS FROM AFONTOVA MOUNTAIN. ABOUT ½

the coarse scraper (6), the typical scraper (2), and the point (3). Material and technique combine in such a way in a series of implements that, leaving stratigraphic relations out of account, one would be inclined without more ado to consider them as contemporaneous and belonging to the same culture level. The arched scrapers (2 and 4) are close variants of the same fundamental type. The former was made from the inner flake of a pebble; the latter, formed from the crust of a pebble, best represents the leading palaeolithic type of the Yenisei region and is moreover one of the types which permit of classing the Yenisei palaeolithic as a Mousterian age. To this inventory of points, scrapers, scratchers, and blades are to be added a small, fairly well-formed cleaver and a bone point. The latter, though only fragmentary, has been completely determined. Its discovery in this region is of the greatest importance.

When we consider that the series from Afontova mountain, in consequence of the partially confused stratigraphic relations, and the somewhat untrustworthy reports of older discoveries, have been arbitrarily interpreted, the bringing together of stone, bone, and ivory from Peresselentscheskij Point is not so strange. The entire series of scrapers, rich in variety (Pls. I, II), the broad blades, the narrow blades, the one-sided, small, conical nuclei for the finest blades, all that is in conformity with the evidence from Peresselentscheskij Point, to which are to be added the bone points and a baton.

Fig. 8.—Here are illustrations of three supplementary scrapers, two showing large surfaces of the pebbles from which they were made (2 jasper, 3 quartz), one not showing any of the original crust (1 jasper, with retouches of accommodation at the back), and a splendid double scraper of jasper (4), a wholly typical example. The quartzite blade (5), retouched everywhere except at the base, and with an angular point, is clearly related to the opalescent quartz blade with completely retouched margins (6). The chalcedony blade (7) bears only very slight retouches of accommodation and a few flat chips have been taken from the edge.

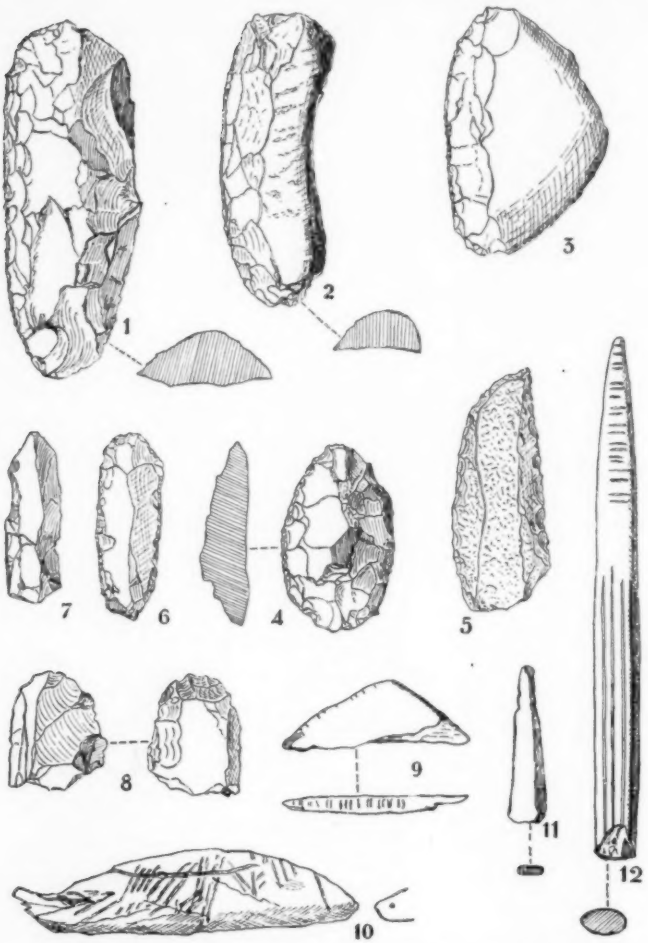
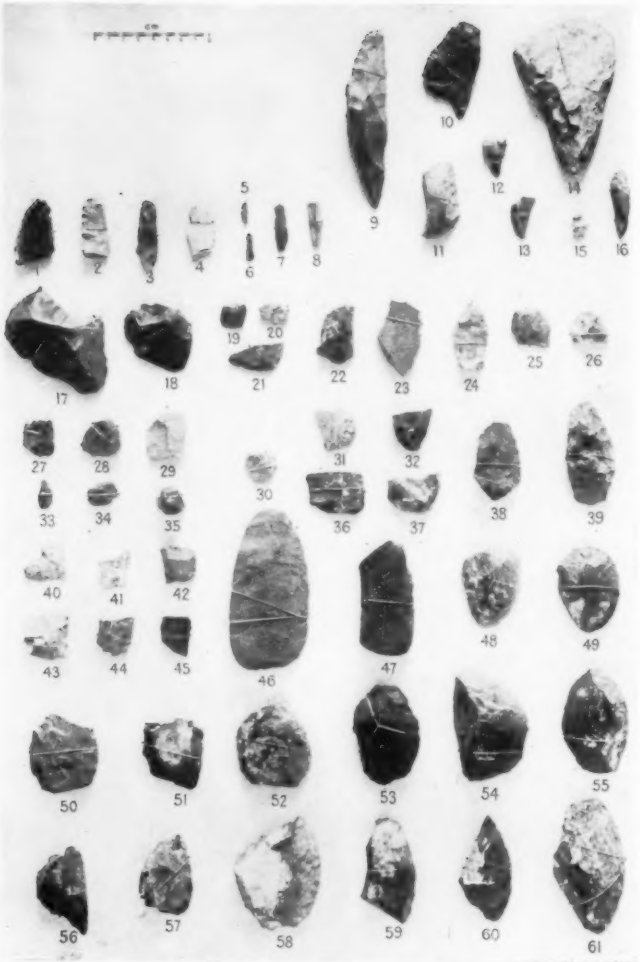


FIG. 8.—Industrial remains from Afontova mountain. Nos. 1-8, stone; 9-10, ivory; 11-12, bone. About ½.

12



STONE IMPLEMENTS FROM AFONTOVA MOUNTAIN. ABOUT $\frac{1}{3}$

Points and awls are not represented at Peresselentscheskij Point, whereas a number have been found at Afontova (Pl. II, and Fig. 9 from pen drawings to supplement the plate). There we find a coarse point (Pl. II, 14 and Fig. 9, a), awls (Pl. II, 10, 12 and Fig. 9, b and c), small curved points and the striking long narrow point (Pl. II, 9 and Fig. 9, e), from 12.7 cm. in length. The latter comes from the same culture level and the same site as the typical scraper (Pl. II, 54), the nucleus employed as a hollow scraper (Pl. II, 43), the nuclei (Pl. II, 28, 29), the saw (Pl. II, 4 and Fig. 9, f), the retouched chip (Pl. II, 11), and the spear points (Pl. III, 19, 20, 21, 24, 26). This is added as a general inventory.

FIG. 9.—Stone implements from Afontova mountain. ¼.

It might be well to mention here that at a second place, in a layer which certainly had not been disturbed, the following were found: Handsome scrapers chipped from gray, transparent quartz (Pl. II, 48, 55, 60), the small nuclei (Pl. II, 33-35), the point (Pl. II, 14), the awls (Pl. II, 10, 12), the blades (Pl. II, 5-7), the bone points (Fig. 13, Nos. 12, 15, 17), and the baton of reindeer horn (Fig. 13, No. 18). In such a manner is the homogeneity for this baton established, and the types therein represented unite this series with the culture of Peresselentscheskij Point. In the list of bone points we recognize the second group described by Savenkov and De Baye, viz., thick, narrow points. Savenkov assumed that the grooves of these weapons served for chipping flint, and in all probability such a technique was known to the loess dwellers. More often, however, the gutters are too shallow and sometimes seem in places little adapted to flint trimming, e.g., on the middle of the broad face near the shaft, or on the transition from the broad to the narrow face. Traces of a substance used as a fastening could not be established with

certainty. One may, however, refer to the grooves as so-called blood or poison grooves.

Two pieces of ivory are to be classed among incised objects (Fig. 8, Nos. 9, 10). The small, almost triangular one, flat in cross section, bears on the long margin a groove, 1-2 mm. deep and of like breadth, which stretches along about two-thirds of this margin and exhibits traces of a white substance which must have served as a mode of fixing stone splinters. The back of the specimen is marked by short parallel transverse incisions. The whole is evidently the handle of some implement. The use which the second object served is problematical. It might be an incomplete handle. Attention should also be called to the apparent representation of an eye toward one end which gives the specimen a remarkable similarity in appearance to the stylistic fish idols of the neolithic period of Angara.

FIG. 10.—Baton of reindeer horn from Afontova mountain. ½.

The most remarkable piece, the baton (Fig. 13, No. 18 and Fig. 10), is formed from a piece of reindeer horn. The distal end seems to have been broken off, and the two ends near the perforation were cut off; the perforation was produced by conical workings from both sides. The length of this undecorated baton is 23 cm.

Finally, among the specimens said to have been found at Afontova mountain is the peculiar implement reproduced in Fig. 11. Its patina suggests that it came from the loess, but no definite information is recorded as to the circumstances of the find. The specimen is made of deer horn, roughly hewn at the proximal end; the opposite end has the appearance of having been broken off. The entire surface has been artificially smoothed and traces of incisions are scattered irregularly over the surface. Near the proximal end is an oval perforation, greater in dimension

at the surface than at the center of the horn. The longer margins of the perforation are worn smooth, either by use or intentionally against some smooth object. The oval shape of the perforation, the smoothness of its margins, the form and adaptability to the hand of the whole piece, give one the impression that it was the handle[20] of a weapon. What kind of weapon it was is not clear, for, as stated, on account of its color, the piece must have come from the loess and it is difficult to believe that a polished stone ax should have come from the loess.

FIG. 11.—Baton of deer horn. Afontova mt'n. ¼.

All of the above-mentioned finds from Afontova seem to have been correctly ascribed to one and the same culture level, but there remains a small number of stone implements for which a definite relationship has not yet been established. These are the jasper and quartz artifacts, blades from 3.5 cm. in length, in part with splendid steep retouching along one margin, scrapers and awls from 2 cm. in length, also carefully retouched, in all about a dozen microlithic tools (Fig. 12), which were found in an isolated spot in a scarcely distinguishable culture seam. Associated with them lay the fragment of a scraper, chipped in

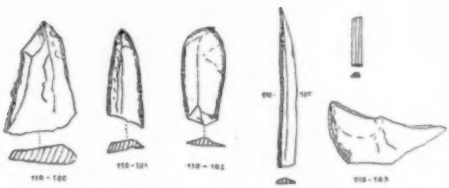


FIG. 12.—Microliths. Afontova mountain. ¾.

the usual way except that the retouching was less steep. The presence of the small nuclei in the inventory of the above-mentioned stations presupposes the persistence of small blades, and the technique represented by the fragment of a scraper falls

[20] The translator does not share in this opinion. This specimen should be compared with one from Bruniquel (see Anthropologie, XIV, 308, 1903).

entirely within the limits of variation of this type of implement. Meanwhile one must not lose sight of the fact that among the remaining stations this kind of microlithic material is not yet known.

It is worth while once more to recall that the association of the bone and horn industry with the old type of stone industry

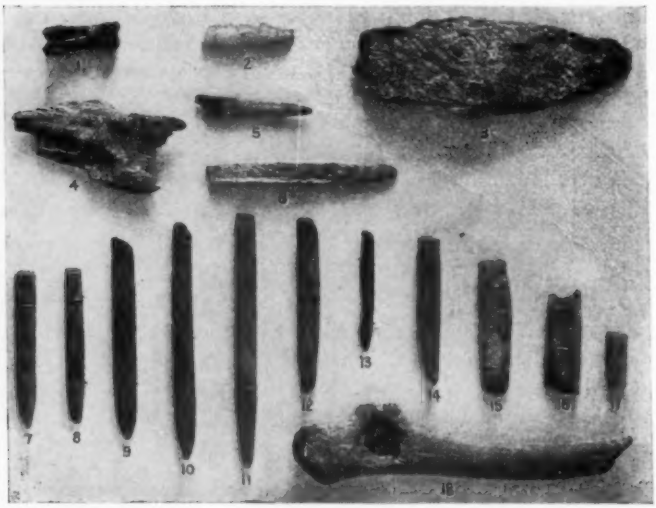


FIG. 13.—Implements of bone and reindeer horn. Afontova mountain. About $\frac{2}{3}$.

has been established with certainty many times, principally by prospectings, so that a distribution of the inventory amongst the various horizons is not possible without the clear results based upon Sergejev's trial excavation of Peresselentscheskij Point. The geologic section with homogeneous loess complex is in itself an argument against the theoretic assumption of two culture levels. On the contrary, I consider it possible that a systematic excavation might lead to a separation of lower levels, particularly since indications for the occurrence of two culture layers in the same section are not lacking.

Since the purpose of the present sketch is not a detailed description of the palaeolithic period in the Yenisei region, but an effort to establish, after reconnaissance, the continuance of a similar and geologically contemporaneous culture level in the wide region of the southern and middle portion of the Yenisei government, one must necessarily refrain from going into details. In addition, it seems to me that one is justified in treating monographically only material obtained through systematic excavations. In this sense, then, we will take up the description of the finds from other sites.

Kirpitschnye Sarai yielded a typical flint scraper (Pl. IV, 34), a second, likewise characteristic, made from a green quartzite pebble (Pl. IV, 33), further retouched splinters, small nuclei, a large number of blades, some prismatic, others triangular in cross section, and many examples of a scraper oval to rectangular in outline (Pl. IV, 45). The upper face of the latter is always worked by the removal of large longitudinal flakes; the margins were carefully retouched; both small ends were formed into true plane edges through short sloping chippings on the under face. Moreover the under face is formed as usual by means of a single surface of fracture. An animal rib cut in many places on both margins is not to be regarded as an object intended for any definite purpose (Pl. IV, 21).

Unmistakable examples of the known scrapers were found at *Woennyi* village, among them a finely-worked double scraper which could also be used as a point (Pl. III, 28). A small disc-shaped scraper corresponds in its less complete workmanship to the types from Afontova and Peresselentscheskij Point. Aside from a number of bone and antler fragments which bear traces of animal teeth, there are those which bear tool marks; a flat piece of bone with a deeply cut groove on one border (Pl. III, 3), and the fragment of a bone lance-head, flat in cross section, represent an industry based on cutting tools, to which is to be added a tusk that was mentioned earlier as raw material—sawed through and split lengthwise, together with several fragments of ivory.

Finally *Ladeiki* yielded a number of scrapers, undoubtedly of the type already described. A comparison of examples of Pl. IV, No. 1, with Pl. I, 5, or Pl. IV, 3, with Pl. II, 55 and Pl. I, 15, makes further citations unnecessary.

The only good artifact in the collection from *Ajoschka* is a crude nucleus with subsequently retouched scraping edge on one

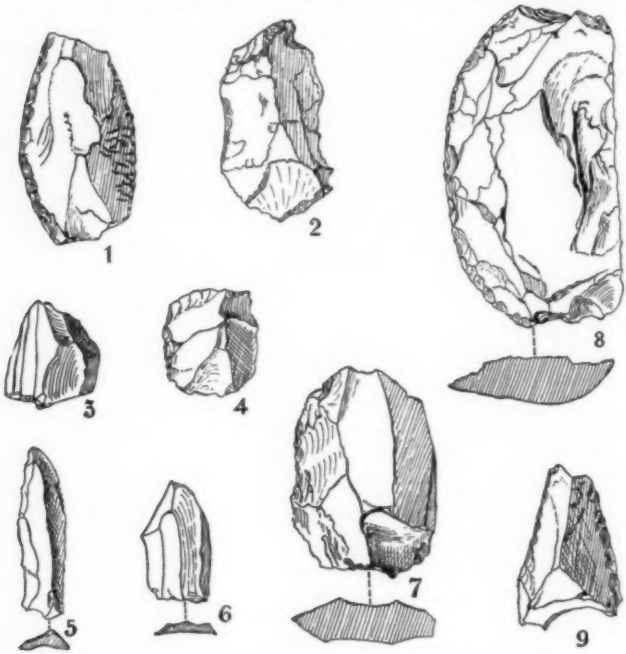
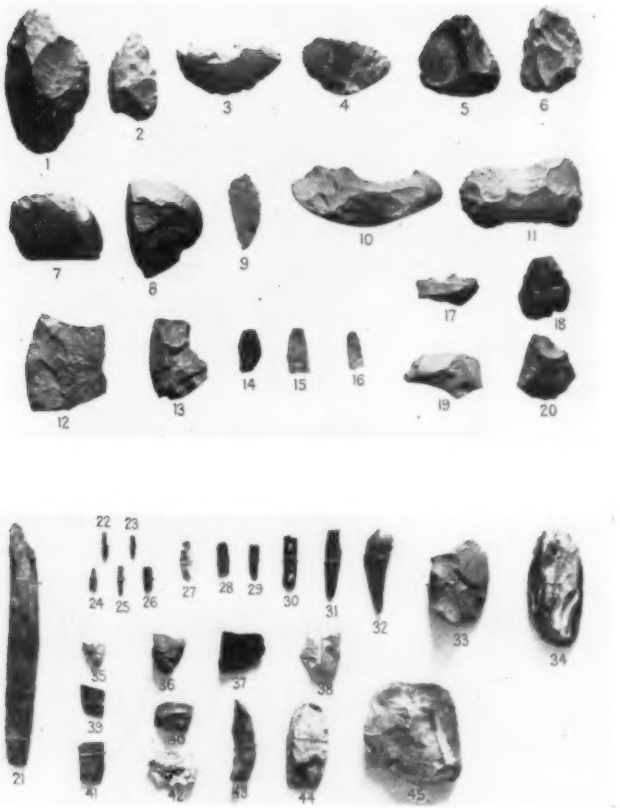


FIG. 14.—Stone implements. Lepjoschkina (nos. 1-7); Busunova (nos. 8, 9). About ½.

side and marks of utilization at several points, similar in technique to the industry from other places, but in itself hardly a typical tool.

The principal forms which *Busunova* yielded are reproduced in Fig. 14, Nos. 8, 9. Half of the under face of the large scraper of bright green jasper consists of the natural surface of the pebble

IMPLEMENTS OF STONE, BONE, REINDEER HORN, AND IVORY FROM WOENNYI VILLAGE. ABOUT ½



PALAEOLITHIC IMPLEMENTS

Above (nos. 1-20) stone implements from Ladeiki; below (nos. 21-45) implements of bone and stone from Kirpitschnye Sarai.

from which the implement was made. The surface is wholly unworked except for the removal of two flakes by way of accommodation. The upper face is reduced by means of flaking, only partially successful because of the unsatisfactory mode of fracture of the stone—a mode which prevented the production of a good percussion platform, and yet the workman succeeded in producing a well-arched cutting or scraping edge. The second piece, also of jasper, is to be classed as a double scraper rather than as a point. It is triangular in section whereas the other points represented in the culture are worked down to a flatter level. The careless retouching of one margin is in itself not without parallels among the true points, but the angular outline excludes this piece from the series to which Peresselentscheskij Point (Fig.7, 3), Lepjoschkina (Pl. III, 28), and Bateni (Fig. 15, 5) belong. The whole technique represented by the implement corresponds to that observed elsewhere in the same region, so that it must be looked upon as the product of the same culture level to which the other stations belong even when not found in association with the wholly typical scrapers. The inventory of the Busunova station is supplemented by several retouched splinters, a second well-worked scraper, and half of a river pebble, the latter being retouched on the under face of the steep sloping surface of fracture 2-3 cm. high.

Twelve artifacts were found in the vicinity of *Lepjoschkina* —among them six nuclei. On one of these it was possible to fit two partially retouched blades. The nucleus is represented in Fig. 14, No. 7, and one of the two blades in the same figure, No. 5. The nucleus itself was retouched along one side of a margin in order to be used as a tool. The material is cryptocrystalline quartzite. The small nucleus (Fig. 14, No. 4) was used in like manner, as was also No. 3. Proof of such use is first of all the working of the adjacent portion of the under face by means of small flakes, the obvious purpose of which was to produce a blunt angle. Nearly every nucleus was further used in one way or another—the flat nucleus (Fig. 14, No. 6) for example, bears fine retouches near the broken point—yet the original character of a nucleus is vouched for by the blades which

were struck from it. The broad blade of brown jasper with a portion of the pebbly surface on the upper face bore careful retouching at two points (Fig. 14, No. 2). Near the point there is a small notch that might have served as a spoke-shave.

The best specimen in the small series from Lepjoschkina is the point made from a slate pebble (Fig. 14, No. 1). The under face was as usual produced by a single surface of fracture without retouches; the upper face was flattened by the removal of a few flakes so that the maximum thickness is only about 0.95 cm. (Peresselentscheskij Point 1.05 cm., Bateni 1.15 cm.). The point is missing. The specimen is bilaterally symmetrical. One margin bears a double series of retouches, the other a single series of somewhat lighter retouches. The somewhat thickened base was chipped so as not to hurt the hand.

The remaining station, *Bateni*, is characterized especially by relative richness in artifacts. We select for description a series of striking implements. We find the same familiar scrapers of various forms, but always of the same technique. The under face is nearly always produced by means of a single blow, sometimes with rather crude subsequent rechipping for the purpose of reducing the thickness. Less often the under face is simply the unchipped surface of the original lump. The cutting edge is formed through preparatory removal of larger flakes and then is for the most part carefully retouched. Of this group, rich in variety, several examples are reproduced in Fig. 15, 1, 3, 4 (No. 2 has three utilizable scraping surfaces). The artifact reproduced in Fig. 15, No. 7, is to be included here because of its technique. It was completed on the under face by flat retouching confined to the cutting edge. The result is a flat, hollow, plane edge. The production of the cutting edge from both sides is a striking feature. Without this detail one would, as already stated, place the specimen without hesitation in the series of scrapers. This technical singularity is a bond of union between the specimen in question and certain examples of an older type. The implement of striped, bright green jasper reproduced in Fig. 15, 9, is obviously related to the foregoing. The one striking difference is that whereas the former has a typical flat under face, the latter is

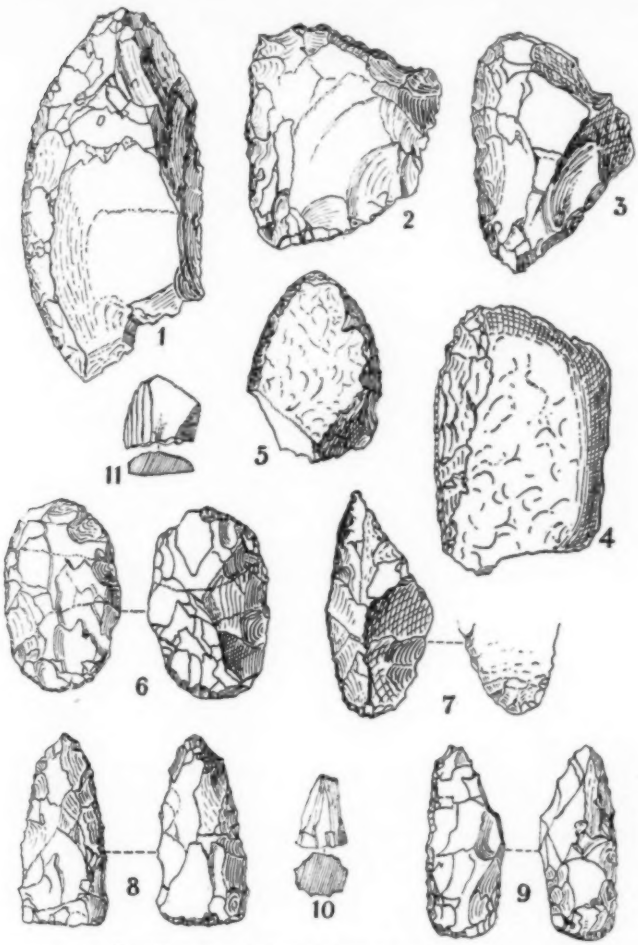


FIG. 15.—Stone implements from Bateni. About $\frac{2}{3}$.

chipped on both faces but with the fine retouching on the under face confined to the arched edge.

The implement reproduced in Fig. 15, No. 5, is formed from the same raw material as the scraper, 4. The tip of the point is broken; the right margin is roughly retouched in comparison with the left. Retouches of accommodation are to be noted on the base. The under face is a single surface of fracture. Two small nuclei (Fig. 15, 10, 11) correspond throughout with examples from other localities but do not show any definite indication of subsequent use.

The small cleavers (Fig. 15, 6, 8) are worthy of special notice. The first is of an oval type with both faces completely worked and with marks of utilization along the margins. Its maximum thickness is 1.8 cm. In technique, condition, and patina as well as material (striped, bright green jasper), this cleaver is closely comparable with the scraper with plane edge already described (Fig. 15, No. 7). The second is a smaller, triangular type with marks of utilization along the margins and the point broken through use. Its maximum thickness is 1.5 cm.

Summary

If here and there doubts have arisen as to the palaeolithic age of the culture from Afontova mountain, they could hardly have been dissipated hitherto. Now the observed geological sections at several points speak clearly enough and even the little that we can say today with certainty concerning the fauna suffices, so far as it goes, to justify us in placing the Afontova culture not nearer to the present at least than the closing phase of the last geologic epoch. Living under a severe continental climate in a steppe environment,[21] the palaeolithic hunter of the Yenisei region chose by preference his temporary abode on the loess, which was in process of formation near restricted water courses. Cave habitations have not yet been reported in this region. The stations in the open, recognized here by means of extended but somewhat thin culture deposits, there by means of limited hearths, in certain cases only through culture remains uncovered by the wind, have been located along the Yenisei

[21] See plan, Fig. 16, showing the present distribution of steppe and forest in relation to palaeolithic sites.

valley and its immediate vicinity all the way from Krasnoyarsk to Minussinsk.[22]

Geologically the sites seem to belong to one and the same epoch, viz., the transition betweeu diluvium and present. The fauna is not inconsistent with such a conclusion. The culture remains are, as we believe to have been proved, of such kind that we are justified in assuming that all the stations belong to the same culture level.

To which level do they belong? A considerable portion of the Yenisei palaeolithic forms find their parallel in the typical Mousterian and the transition to the Aurignacian of Europe. For the series of side scrapers, the double points, the single points, awls, punches, absolute comparative material is to be found at the type stations of Le Moustier, La Ferrassie, and above all La Quina, to mention only the best-known sites. The rock shelter of Audi can also be drawn upon in a measure for comparison. But after such comparisons there still remains a residue, if we next consider only the stone industry, which cannot be matched in the same levels. The small duckbills, narrow blades, delicate nuclei, and nuclear-shaped scratchers are pronouncedly late palaeolithic in comparison with the western material. In a few cases a comparison may be made, but the more distinct types, the small, entirely or prevailingly round flat-scrapers, are, as noted by Obermaier,[23] in themselves not

[22] Proofs of the presence of the palaeolithic period are reported from Sykova east of Krasnoyarsk, from the valley of the Tschulym south of Atschinsk near Ligostajeva, and Staraja (Novoselovskaja Volost), also from Borki (Novo Michailovskaja Volost); from the last-named locality, Sosnovski collected a fine double scraper. We found a similar implement in Potroschilovo at the mouth of the Tuba, an atypic splinter with pronounced glossy patina and one-sided retouching, which might well be of palaeolithic age. A corresponding geologic deposit or culture deposit has not yet been found. Finally it should be recalled that an excavation by A. S. Jelenjev was carried out in 1891 at the mouth of the Birjussa brook, 45 km. above Krasnoyarsk. Three distinct culture levels were reported; the lowest lay at a depth of 2 m. Among the objects found during the excavation and in part preserved at Krasnoyarsk, are bone points with longitudinal grooves on one side, a form repeatedly noted from Afontova, and a number of small, relatively thick scrapers with one-sided steep retouches, which do not occur in the neolithic epoch, but which find very good parallels in the palaeolithic, for example, Peresselentscheskij Point. Unfortunately no record was kept of the culture levels from which individual specimens came.

[23] Mitt. d. prehist. Komm. d. Akad. d. Wissenschaften. Wien, II, 2, 1912.

well adapted for the determination of definite archaeological levels. Besides, one should perhaps speak of the Aurignacian character of the technique, because of the frequent excellent retouches which in many cases surround the entire margin, and one could for this classification give some weight to the nuclei

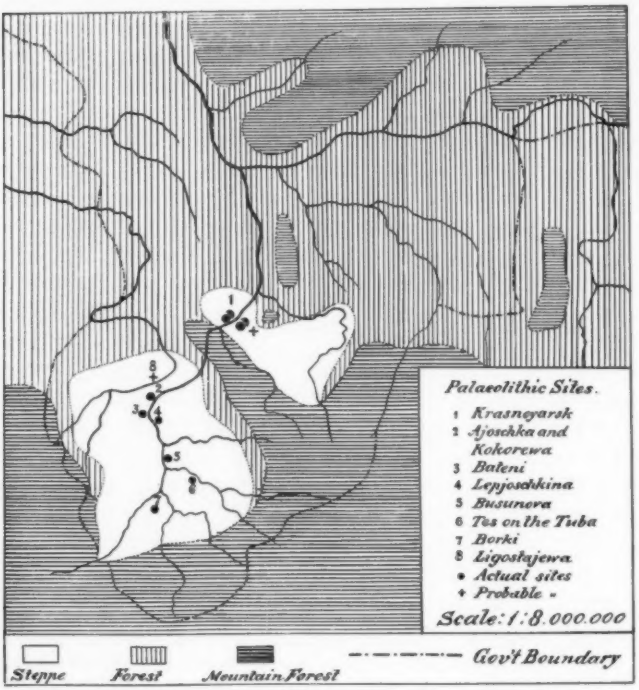


FIG. 16.—Palaeolithic sites of the Yenisei Government.

used as scratchers. It should also be noted that the later stages are represented neither in technique nor in form (absence of the Solutréan retouch) but certain general criteria suggest the Aurignacian, although no single typical form is present. If we take the total complex of the finds, for example from Peresselentscheskij Point with its combination of older and younger forms

which go with an unembellished but well-developed bone industry, we have nothing in the west of a corresponding character to exhibit. The palaeolithic workman who produced, out of the same lump of stone, arched scrapers and points, duckbills, narrow blades and elegant nuclei, and added to such an inventory a spear point and a bone punch, had, if the expression is allowed, not learned in the western workshops, at least had not taken part in the development of the west.

If it is not permissible to place the industrial remains of the Yenisei valley in the lower palaeolithic period, neither can they be identified as belonging to one of the epochs of the upper palaeolithic. Indeed careful excavations may give new information and the problem seems to be important enough to stimulate such.[24] For the present we shall limit ourselves by designating the old Stone-Age culture of the Yenisei as belonging to the upper palaeolithic with a Siberian facies.

MUNICH, BAVARIA.

[24] B. E. Petri, who excavated on Wercholensk mountain near Irkutsk, and is planning to publish a report as soon as possible, wrote me under date of June 25, 1920, "that Irkutsk and Krasnoyarsk represent the same epoch, viz., Magdalenian. The objects are the same. Nearly all of your drawings look as though they had been made from the things I found, so remarkable is the similarity. . . . You have a complete *bâton de commandement*, I have harpoons," and under date of May 3, 1921, "I am convinced that we have to do with the Magdalenian, to be sure with many special characteristics." We look forward with great interest to the publication of Petri, based on systematic excavations, particularly as the above cited letters leave us to assume that the Siberian upper palaeolithic with its peculiarities will widen the extent of our knowledge. It should be noted that the harpoon of the Afontova culture was perhaps not entirely lacking, though finds are yet to be reported. According to my notes, one of the spear points bore, on the lateral margin near the point, shallow notches whose execution points to the unmistakable intention of producing barbs.

THREE-POINTED STONE *ZEMI* OR IDOLS FROM THE WEST INDIES: AN INTERPRETATION

By ADOLFO DE HOSTOS

History

MODERN archaeologists have generally shown a marked tendency to regard the three-pointed stones from the Greater Antilles as enigmatical, mysterious, and puzzling.

Dr. J. W. Fewkes[1] has reviewed the interpretations of these objects given by several authors and has critically discussed most of them. We learn from his excellent monograph that the three-pointed stones have been variously interpreted as paint mortars; representations of the genius of Porto Rico in the figure of a man or animal; as symbols to account for volcanic phenomena; as the genius of evil weighed down by Boriquén; as cosmo-theogonic symbols—the Creator and inert matter on two sides of chaos, which extends over the firmament; as clan idols or images of tutelary totems—this last being probably the first step taken towards a rational interpretation.

The late Father Nazario, the most successful local collector of Indian antiquities, saw in three-pointed stones a symbol of the Biblical legend of Jonah being swallowed up by the great mythical fish! No doubt the father was influenced by the theorists who, fifty years ago, claimed contact between certain peoples of the Mediterranean basin and some islands of the West Indies.

Mrs. Zelia Nuttal[2] believes that the three-pointed *zemi* is a symbol of the Above, and infers, on this evidence, that the aborigines of Porto Rico practised some form of a Mexican cult.

Mr. T. A. Joyce,[3] while admitting that "their exact use is a mystery," rightly believes, without giving reasons, that the idols

[1] J. W. Fewkes in 25th Annual Report, Bureau of American Ethnology, 1907, pp. 128–132.

[2] The Fundamental Principles of Old and New World Civilizations, p. 118.

[3] Central American and West Indian Archaeology, 1916, p. 186.

are to be identified with the three-pointed agricultural *zemi* mentioned by Pane. He has even suggested that the conical projection represents the root of the *yuca* plant.

Dr. Fewkes, in his latest researches upon the subject known to the author (1913), advocates the theory that these objects were *zemi*—idols.

Casual observers have perceived in these stone forms relations with weapons and instruments of torture. Local tradition in Porto Rico, even when speaking through the mouths of illiterate individuals, whispers that the objects were used to aid women in parturition.

Method of Research

In approaching the solution of this problem we propose—in order to restrict to the minimum the field of conjecture and imagination—a survey of (a) the historical, (b) the archaeological, and (c) the auxiliary or collateral evidence. By this last line of conduct we mean that, insofar as it is possible within our capacity, we must limit the application of collateral evidence only to those cases in which scientific corroboration may be obtained.

Discussion

Recognizing the fact that in this particular case it would be a great error of judgment to ignore the testimony of one whom we have good reason to believe was an eyewitness of aboriginal cults and ceremonies, we will begin by examining the testimony of Ramon Pane. This friar, in the last years of the fifteenth century, went among the Indians of Haiti, learned their language, and reported to Columbus on their religion. Pane states that certain *zemi* "have three points and they think they cause the yuca (manioc) to thrive."[4] This is quite a definite statement, worthy of careful investigation, especially when we remember that, of the thousands of prehistoric stone relics gathered in the West Indies—except some which are obviously utilitarian, like certain flat, more or less triangular blades and a few stone rubbers, having three roundish points—the only class of objects which could possibly be identified as the objects mentioned by Pane are

[4] As quoted by Fewkes, op. cit., p. 131.

the three-pointed or mammiform stones. He tells us that these stones were *zemi*—a collective term which may be translated as "sacred thing"; specifically, an idol, or thing to be worshipped. He adds that the Indians thought that these idols caused the yuca to grow.

It becomes then a logical necessity to find out in the historical records—and not by assumption or implication—what was the immediate object or purpose of idolatry within the Haiti-Porto Rico culture-area. Any interpretation based on the religious, social, or political principles of other peoples of the world, even of other peoples of America, is purely speculative.

What little we know about the worship of idols in this region may be summarized in the following excerpts, compiled by Mr. H. Ling Roth[5] in his "Aborigines of Hispaniola":

> Most of the *caciques* have also three stones which they were said to worship, one to help corn and all sorts of grain, a second which helps woman to be delivered without pain, and a third which procures rain or fair weather according to requirement.
>
> . . . some [idols] that speak, and others that cause things to grow, some that eat, others that cause rain, and others that make the wind blow.
>
> They have a name for every one, [zemi], regarding this as their patron on this subject, and that as their patron on that subject. . . .
>
> These people only ask of their gods plenty to eat and drink, and good health, and victory over their enemies.

Worship, then, was almost, if not exclusively, practised for temporal benefits desired. One of the benefits expected proceeded from the cultivation of the soil. In this connection we learn that certain idols were used: (a) to help corn and all sorts of grain, (b) to cause things to grow, (c) to cause yuca to grow.

Keeping in mind the fact that a *zemi* with three points was thought to promote the growth of the yuca plant, we may infer that the idols which helped corn and all sorts of grain, as well as the one which caused things to grow, may have had the same, or at least a similar, related form.

Turning our attention now, for the present, to the archaeological evidence,[6] it is thought convenient to group these objects in

[5] Jour. Anthr. Inst. of Great Britain and Ireland, vol. XVII, no. 3.

[6] For detailed descriptions of three-pointed idols see Fewkes, op. cit., pp. 111–128; Joyce, op. cit., pp. 185–186; and Otis T. Mason, "The Latimer Collection of Antiquities from Porto Rico," Smith. Rpt., 1876.

accordance with a biological scheme of development—from the simple to the complex—in order to approach the interpretation of the morphological details:

1. A small conoid monolith, without carvings and with plain projections—that is, without any intentional modifications of the lateral extremities (Fig. 17, a). Each has a pronounced conoid projection.

2. The same as above, except that there are rudimentary protuberances at the anterior and posterior projections (Fig. 17, b).

3. A three-pointed stone having a human or an animal head carved in one or both (rarely) of the lateral projections and the lower extremities of the being carved in the other (Fig. 17, c).

4. Where the head is placed on the conoid, between the apex and the anterior projection, facing toward it (Fig. 17, d).

5. Where the head or face occupies the place of the conoid projection, facing up, the stone resting on its base (Fig. 17, e).

6. Where the head or face is carved on one side of the conoid projection, facing at a right angle with reference to the lateral projections. These consist of a simple or a double protuberance or knob-like swelling (Fig. 17, f).

Although the above classification is arbitrary, there is a hint of an evolution in the form of the objects, which it is of importance to bear in mind.

As to the differences in the shape of the conoid projection, we note that the degree of convexity varies considerably in the several specimens. Some resemble closely a cone, the apex, however, never ending in a sharp point; some are conoid, sometimes resembling mammae; others are hemispherical—semicircular in outline; sometimes, cylinder-like, being circular in cross section, with a rounded apex; a few are flat-topped. Generally, in the more conoid specimens, the apex tips slightly (sometimes considerably) forward.

In this connection the following circumstance should be particularly emphasized: that the simpler, evidently the most archaic forms, have always a pronounced conoid projection (Fig. 17, a

and b). No examples of this class are known to the present writer having hemispherical or flattish upper projections.

It is reasonable to suspect that these variations in the form of objects which preserve certain constant features may correspond

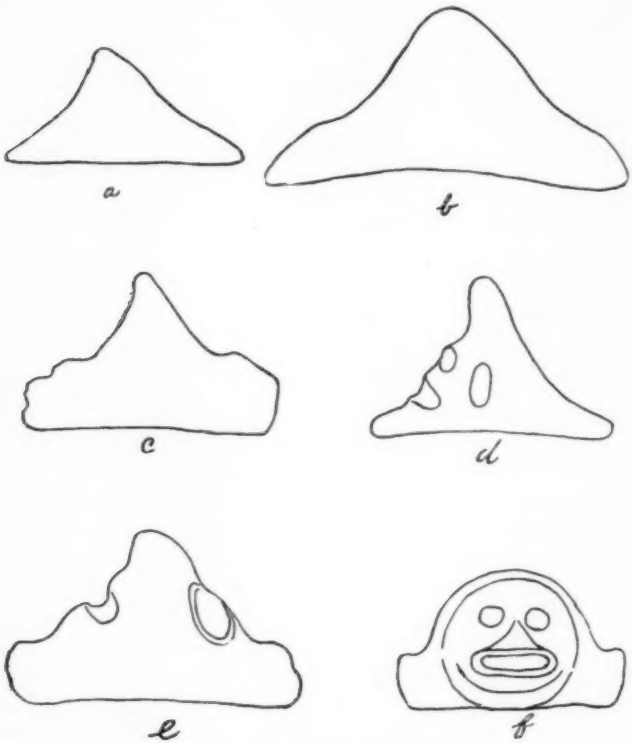


FIG. 17.—Three-pointed *zemi* from Porto Rico.

to secondary adaptations in their use. This hypothesis, together with the above quoted reference to the diversity of food plants supposed to be helped by a *zemi*, allow us to infer that different forms of the *zemi* were used for different kinds of plants. In all

probability the specimens to which Pane refers as having been dedicated to the yuca plant were those of a well-defined conoid shape, with a more or less acute apex. Vague as his description is, it could not well be applied to a specimen of the rounded or hemispherical type. Thus, as will be shown later, reasons are not wanting for associating the original conoid shape with the cultivation of root plants.

We have now arrived at the climax of the discussion: what symbolical relation, if any, could there exist between the shape of these idols and the natural phenomenon of vegetable growth? The conoid projection—however modified—being the constant feature, the attempt may then be made to find a symbolical connection between it and the phenomenon of vegetable growth. The problem has been reduced to this postulate:

The conoid projection is an objective representation of vegetable growth.

In the succeeding pages we must devote our attention to vegetable growth, in its visible, superficial aspects at any rate, for we well know that no other could be within reach of the Indian's mind. Being aware of the real tendencies of Antillean idolatry, we will confine our efforts to plants of Indian origin.

As relevant collateral information an estimate should be made of the status of agricultural art among the West Indian Arawaks in order to judge as to the possibility of theoretically expecting from them the making of certain simple observations, which we will later on attribute to them, as mere incidents in the routinary tasks of aboriginal agriculture.

The Taino (Arawak) tribes of the Greater Antilles were remarkable agriculturists. They had, at the time of the conquest, developed their own methods of soil preparation, sowing, irrigation, and isolation of crops, and they were even beginning to recognize the value of artificial fertilization.[7] They were careful to select certain periods of the year for planting.[8] Whether of insular or continental origin, the domestication of the yuca plant and the complicated manipulation of its poison-

[7] H. Ling Roth, op. cit., p. 271.

[8] Oviedo, Historia General y Natural de Indias, Madrid, 1851, vol. I, p. 265.

ous roots, which rendered them harmless, in order to make their bread—*cazabi*—is an agricultural feat which must have required the exercise of no mean power of observation during a considerable length of time.

Some authorities believe that the idea of cultivating economic plants originated in the Caribbean region and spread thence westward around the world.[9]

Martir Angleria (Madrid, 1892, vol. II p. 435) has preserved a tradition clearly pointing to the beginning of agriculture [in Haiti] by the domestication of esculent root plants. He also describes the several roots which, during a long time, served as the only kind of food to the original inhabitants. The value of this information on the elucidation of the present theory cannot be over-estimated. It is precisely a root-growing people whom we should expect to evolve the peculiar ideas connected with the development of the three-pointed stone as an agricultural idol.

Encouraged by a passage in Oviedo's History, where the statement is made that the yautia was cultivated in Haiti "with much diligence and special care"[10] and by a botanist's belief in the great antiquity of the yautia as a cultivated plant,[11] we have selected for our little experiment this plant, which still yields one of the most important root crops in Porto Rico.

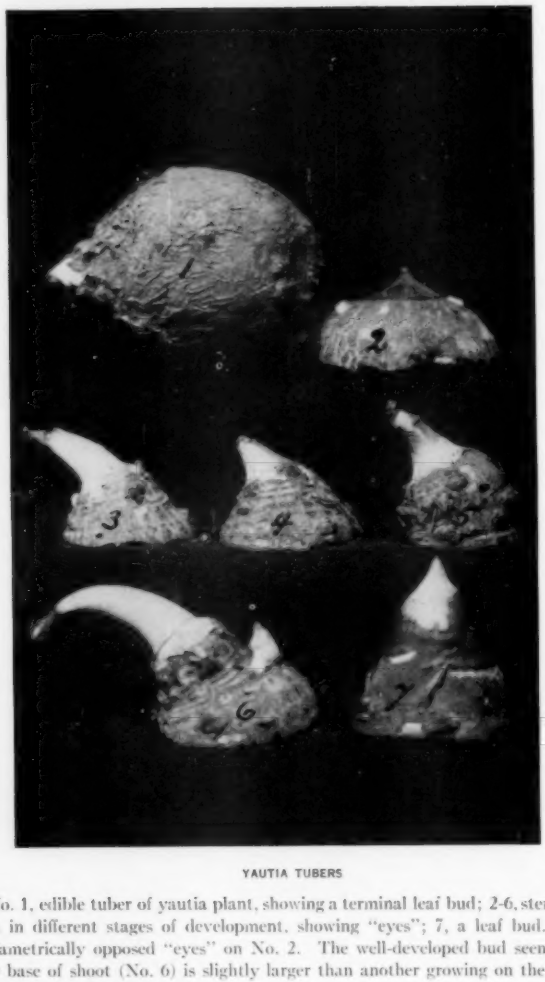
Recalling that Mr. Barrett bases his theory on the fact that the yautia has lost its power to produce seed, while native to the same region—tropical America—as other food plants still capable of reproduction, we gain fresh zest in the investigation as we begin to anticipate a natural sequence of happenings leading to the solution.

It is evident that the artificial propagation of a plant which has lost its reproductive power must have necessarily compelled the ancient farmer to watch closely the external manifestations of

[9] O. F. Cook, "The American Origin of Agriculture," Pop. Science Monthly, Oct., 1902.

[10] Op. cit., lib. VII, cap. VII, p. 275.

[11] O. W. Barrett, "The yautias or taniers of Porto Rico," P. R. Agricultural Experiment Station, 1905. He regards the yautia (or yahutia, tanier, *Xanthosoma*, sp.) as probably the oldest cultivated plant in the world.



YAUTIA TUBERS

No. 1, edible tuber of yautia plant, showing a terminal leaf bud; 2-6, stem buds of yautia in different stages of development, showing "eyes"; 7, a leaf bud. Notice the diametrically opposed "eyes" on No. 2. The well-developed bud seen growing at the base of shoot (No. 6) is slightly larger than another growing on the opposite side, not seen in the photograph.

the phenomena of germination. Of course we mean close observation for the practical purposes of agriculture. We must insist upon making clear our position. We feel strongly inclined to regard the employment of idols in Antillean agriculture as the combined result of three factors: (1) a wish to promote the well-being of slow growing plants (the yautia's tubers, for instance, not maturing until the twelfth month); (2) woodcraft and plant-life knowledge acquired in the course of the native's routinary activities in the field; (3) his mental subordination to animistic beliefs.

It seems idle to accept the validity of any interpretation ideologically connecting the idols with complex theogonic and cosmogonic abstractions.

Let us now uproot an adult yautia plant and see what is going on beneath the surface of the soil, since the edible parts of the plant are the tuberous offsets of the rootstock. Observe these fleshy underground stems with their "eyes" in all stages of growth: firstly, a minute whitish speck, slightly raised above the surface of the tuber; then, as it swells, becoming a protuberance which, forming the bud, takes a decided conoid shape, the apex generally tipping to one side (according to its position on the tuber). See Pl. V, Nos. 3 to 6. The well-developed bud assumes sometimes a roundish shape, bulging to one side (No. 5). From the apex develops the shoot which later differentiates into a plant stem (No. 6). Long before the shoot has appeared new "eyes" develop near the base of the stem bud, often at the extremities of one of its diameters (Pl. V, No. 2).

The "eyes" are germination points which may or may not develop into suckers or new tubers in accordance with certain conditions. It is a common practice in Porto Rico to cut up the tubers into "sets" or pieces for propagation. We presume that the method was also known by the aborigines. While doing this, any farmer, modern or ancient, must be careful to see that "eyes" are included in the sets he intends to sow. Moreover, while repeatedly handling these pieces, the agriculturist becomes familiar with the appearance and condition of the eyes and buds in all their stages of growth as he may show individual preferences in

this respect in connection with his wishes to obtain the best "seed" and the quickest results. The fact that these "eyes" are germination points scattered over the surface of the tuber is therefore firmly fixed in the farmer's mind.

We may now assume that—according to the processes of thought of primitive man yet in the animistic stage—the Indian saw in the development of the bud, which he knew by experience to contain the germ of a new plant, the activities of supernatural forces, of spirits—*zemi*—upon which he naturally bestowed a human form and human attributes. If the earth, the sky, the stars, the wind, rain, thunder, and the animals were possessed of spirits which directed their actions, why should we hesitate to invest their food plants with a similar power?

Most primitive beliefs in supernatural beings are logically (in that state of mind) associated with propitiatory practices. Whether good or evil the spirits of things must be pleased—to gain the favor of the former or to prevent the ill-effects of the latter. For a people incapable of much abstraction, the easiest way to please these unseen forces (spirits) was to make—incise, paint, carve, or weave—their material representations or imaginary likenesses and to propitiate them according to the particular form of worship involved. Throughout the Antilles, indeed throughout pre-Columbian America, it was believed that any material representation carried with it the powers and attributes of the thing represented. Is not this the very essence of idolatry? At this point we may suggest that the conoid projections of three-pointed stones are representations of the stem buds of certain tubers used as food by the Taino tribes of Porto Rico, Haiti, and perhaps other islands of the archipelago; that the conoid was made to symbolize the invisible power of germination which they knew to reside within the bud. The spirits supposed to reside within the object were propitiated in order to help the plants to grow. The bulging conoid of the *zemi* would, by sympathetic magic, remind the plant spirit of the maker's wish for large, fat tubers, capable of germination, of fruitful reproduction. It will be seen, then, that if the plant spirit was represented by a conoid stone, the original forms must have been devoid of bio-

morphic carvings. This theory would satisfactorily explain the existence of very small specimens (as well as some very large ones)[12] entirely devoid of life carvings and of which, to the present, no interpretation has been possible.

By a simple process of association of ideas this apt symbolization of germination in the yautia plant may have been extended to other plants. Or, by a gradual process of form modification, an effort may have been made to simulate the entire form of those roots which were devoid of "eyes." There is a specimen in the writer's collection resembling a yam or a large sweet potato.

It may well be imagined that, as the *yautia-spirit* cult developed, the attention of the *bohii*, priest-sorcerer, was attracted by the simultaneous growth of new eyes appearing near the base of the bud. To him, no doubt, the swelling bud lodged a spirit. But there were also visible points of lateral growth as evinced by the new "eyes"—a process which must have suggested to these sorcerers the existence of vital motion from the inside outwards—laterally—in addition to the vertical growth which culminated in the formation of the plant stem.

To this moment in the evolution of the three-pointed stones may correspond Group 2 of our classification outlined above, stones with knob-like swellings in place of biomorphic carvings at the lateral projections. It seems but natural to believe that the mind which saw a supernatural spirit ruling the life of the plant —and which pretended to locate its pulsations in the fecund buds—would see in the course of time, pressed by the necessity of giving an outward representation to his animistic concepts, the head and the propelling limbs of the spirit hidden in the new swollen spots which he had already represented by means of rudimentary protuberances in the early forms of the fetish. Hence the carved human or human-like face and the human or human-like legs and feet carved in the lateral extremities. The forward motion implied by the position of the human figure would have to be expressed by showing the lower extremities of the being depicted in the only position compatible with rapid forward motion for a man lying down on the stomach—the crawling position.

[12] The smallest of these specimens known to the writer is about an inch in length—on the longer axis of the base; the larger is nearly 30 inches long.

Unquestionably the idols were used by burying them in the soil, somewhere within the garden or plat, the conoid projection up, near the particular plants whose "fertilization" it was thus thought to accomplish. At any rate there is historical evidence to the effect that certain objects were hidden in the ground for this purpose. So strong had this belief become among the natives that, after the Conquest, even Christian images were sometimes stolen from the churches for burial in their plantations.

Fertility—i.e., the multiplication of the edible roots of the yautia, the yuca, the sweet potato and other plants—would then be obtained by propitiating the yautia, the yuca, or the sweet potato "spirit" through the medium of its effigy, the *zemi*, so devised as to convey to it a prayer to "move on" within the bud, that is, to grow, to thrive, and to accelerate the reaping of a bountiful harvest.

We must now discuss the presence of avian and reptilian elements seen in several three-pointed stones. Notice, in the first place, that anthropomorphic representations are by far the most abundant, a fact which seems to suggest that the former is the primary and the latter a secondary development.

In relation to agriculture, the animal groups represented—birds, reptiles and mammals—may be divided into two classes: (1) those that are beneficial to plant life; (2) those that are injurious to it.

The love or fear of both kinds of natural agencies has given rise to corresponding cults in primitive societies. Representations of the first class are the most common and therefore we may suppose that those belonging to class 2 represent a tertiary development of the plant spirit cult.

A study of the carvings representing animals beneficial to the plants reveals the fact that those represented are either birds or reptiles. Many of these creatures are predacious animals feeding on insects, worms, and larvae very injurious to plant life. Therefore these animals may be considered the farmer's friends or benefactors. The West Indian mole cricket (*Scapteriscus didactylus*), to cite only one instance, is a burrowing insect and a

tenacious enemy of tender plant growths—rootlets, buds, shoots, etc. Tobacco and corn—two plants of Indian origin—are especially injured by it.[13] The most efficient enemies of the mole cricket are to be found among the following Porto Rican birds: the Cuban green heron, the "falcon" (sparrow hawk), the white heron, and the "buho" (a species of owl?). Among the reptiles the various lizards, especially the ground lizard (siguana) are also enemies of this cricket as well as of other injurious insects.[14]

Of class 2 two animals only could be identified by the author among the many specimens with which he is familiar: a rodent and a waterfowl, the hutia (probably Capromys), and the *Yaguaza* (*Dendrocygna autumnalis*), a nocturnal species of tree duck. The hutia, which has become extinct in Porto Rico, was, like the present field rat, an unwelcome visitor of the yautia plat. Indeed, the plant derived its name from the animal, as yautia (ya-hutia) means place of hutias, a derivation which implies that in ancient times the hutia abounded where the yautias were plentiful. The *yaguaza* is a nocturnal bird. Alighting in flocks in a sweet potato field these birds devour all the tubers partially exposed above the ground. Most bird- and lizard-shaped specimens have human or human-like limbs, a fact which corroborates the opinion that the carvings are not realistic representations of the animals themselves but imaginary semblances of the animal benefactors. Throughout America worshipped animals were often symbolized by figures, partly human, partly animal.

In the great majority of cases bird heads carved in three-pointed idols have long, more or less curved, bills. There are rare instances of birds with a short, straight, pointed bill which is generally seen in Porto Rican fruit-eaters. In a general way the carvings resemble some of the wading birds living along the streams and in the marshes and lakes of Porto Rico and Haiti.

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[13] R. H. Ṣwaluwenburg, "The Changa or West Indian Mole Cricket," Porto Rico Agr. Experiment Sta, 1918, pp. 16–19.

[14] Ibid, p. 17. Ledru (Viage a Puerto Rico, 1793) states that two large species of lizards, over a meter in length, were in his time common in the island.

Perhaps some now extinct species of the ibis and the flamingo are represented.[15] Many of these birds are insectivorous.[16]

Decoration of Three-Pointed Idols

The conoid process is at times decorated with incised designs (Pl. VI). The patterns, in the several specimens, include parallel and angular lines, concentric circles, small pits (cup cuttings), chevrons, triangles, and semicircles. The combinations of some of these elements, in the majority of cases, have the appearance of formal designs used primarily by the Taino tribes for purely decorative purposes. Several of these designs are very similar to patterns seen in the decoration of wooden, stone, and clay artifacts from the same region. There seem to be no grounds, in the present state of our knowledge, for attaching any special symbolic significance to these designs, unless they are interpreted as variants of a diffuse symbolism involved in the decoration of other non-utilitarian objects. However, the relative abundance of complete circles and pits seen scattered over the surface of the conoid projections may bear a certain symbolic relation to the "eyes" which frequently dot the surfaces of the stem bud of the yautia. At any rate, to us the designs seem simply to denote early manifestations of the aesthetic sense of the race in connection with certain propitiatory practices of aboriginal worship.

The Concave Bases

One feature of three-pointed idols which is indeed difficult to reconcile with our interpretation is the almost universal presence of a concave base.

If, as stated above, these idols were used by burying them somewhere within the "conuco," or native garden, the scooping out of the base would be unnecessary. At the same time, according to our theory, there is no explanation to offer for the occasional

[15] Wetmore (Birds of Porto Rico, U. S. Department of Agriculture Bulletin No. 326, p. 27) says that the white ibis is no longer found in Porto Rico and that the flamingo was formerly fairly common. Fewkes (25th Ann. Rpt., B. A. E., plate XLIV, b) figures a three-pointed stone resembling an ibis.

[16] The reader is referred to the often quoted work by Dr. Fewkes for some material on the identification of the animal carvings of three-pointed stones. The following are here of interest: Plate XLI, figs. b, c (lizards); XLII, a, b (lizards); XLII, c (bird); XLIII, a (lizard); XLIII, b, c (birds); XLIV, a, b (birds); XLIV, c (owl).

A THREE-POINTED STONE ZEMI FROM SANTO DOMINGO

Notice the extraordinary resemblance of the upper (conoid) projection to a plant shoot. The round protuberance in *b* and the incised circles (in *b* and *c*) are suggestive of the "eyes" seen in certain edible tubers. The lower circles, near the mouth, represent ear plugs.

occurrence of traces of a resinous substance on the surface of the base and for the presence of furrows behind the anterior and posterior projections.

The concavity of the base, the furrows, and the traces of resin are strongly indicative of attachment of the *zemi* to other objects.

J. J. Acosta, the commentator of Iñigo Abbad's History,[17] was the first to suggest that the three-pointed stone was attached to a stone collar. He based his hypothesis apparently on mythological grounds connected with snake worship, perhaps inspired by the popular belief (in Porto Rico) that stone collars represent snakes. Dr. Fewkes has refuted Acosta's theory, after a comparative study of the morphology of these objects.

However, we think that that part of Acosta's theory which advocates the attachment of the fertility *zemi* to the stone collar should be carefully reviewed in the light of recent progress in Antillean archaeology so notably furthered by the researches of Dr. Fewkes and Mr. T. A. Joyce.

In approaching this question it is believed that an attempt should be made to ascertain, in the first place, whether there is any possibility of associating the three-pointed idol and the stone collar as remaining material evidences of two related animistic concepts.

Mr. Joyce's researches[18] have given to the stone collar its present theoretical status: a retranslation in stone of a wooden or archaic form of a *zemi* or idol connected with tree-worship.

With regard to this Dr. Fewkes adds:[19]

> In Antillean as in other tree worship it was the spirit of the tree that was the object of adoration, and that worship was more or less connected with the material benefits desired: generally the food that the tree yielded.

Also:

> The many similarities between three-pointed *zemis*, elbow stones and stone collars would seem to indicate a corresponding similarity in use, consequently any light on the morphology of one would aid in the interpretation of the other types.

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[17] Historia Geográfica Civil y Natural de la Isla de San Juan Bautista de Puerto Rico, 1866.

[18] Central American and West Indian Archaeology, 1916, pp. 188–191. Also Jour. Anthr. Inst. of Great Britain and Ireland, vol. XXXVII, pp. 402-419, 1907.

[19] Porto Rican Elbow Stones in The Heye Museum with Discussion of Similar Objects Elsewhere, Am. Anthr. (N. S.), vol. XV, no. 3, 1913.

If stone collars are idols it is probable that those specimens of whatever type which are devoid of anthropomorphic and theriomorphic elements—an almost general condition—are incomplete objects. We must look somewhere for their complements. They may have consisted of detachable inlays or adjuncts of either durable or perishable substances. For what then is the indispensable outward, material symbol of the spirit supposed to dwell within the stone ring? Truly, it is inconceivable that an animistic worshipper would have been content with the mere resemblance of the collar to the branch of a tree in which a spirit resided and which he imagined capable of articulate speech expressing thought (Ramon Pane). The dialogue between an Indian and a tree spirit recorded by Pane implies that the former subjectively saw the human form which animated the latter.[20] The spirit and the human or animal form are here so intimately associated that we cannot obliterate one without destroying the validity of the other as a factor of primitive belief.

We have already said that to us the upper projection of three-pointed stones is a symbol of vegetable growth—originally, of bud germination of a root plant. But, although we have suggested it, we have not been able to gather sufficient data to attempt to narrate the several episodes in the evolution of this intensely interesting group of ideas. However, enough has been done to show that there are unmistakable evidences of this evolution in the stones themselves.

It is almost certain that the three-pointed idol and the stone collar are the result of two independent developments, in time and space, of related ideas or concepts. This possible ideologic relation is borne out by the geographic distribution of the objects.

Leaving for the time in suspense the question of how and when the two kinds of objects became united, we will content ourselves with remarking that there is a strong probability that certain types of three-pointed stones were, at a certain moment in the evolu-

[20] Las Casas (Historia de las Indias, Madrid, 1876, vol. v, p. 437) says that wooden idols were ill-shapen and had ugly faces of grimacing old she-monkeys (" . . . estatua o idolo, de mala figura, porque comunmente hacian las caras de gesto de monas viejas regañadas. . . . .")

tion of tree-worship, somehow attached to certain types of stone collars.

Dr. Fewkes's belief that collar and elbow stones were used for ceremonial purposes inclines us to suspect that the stone collar (embodiment of a tree spirit or of a spirit accidentally dwelling in a tree) and the three-pointed stone (embodiment of a food-plant spirit) may occasionally have been united in magical ceremonies where certain sacrifices may have been consummated in order to impart the reproductive power to other plants than those usually placed under the patronage of the three-pointed *zemi*. At all events these stones would morphologically supply the collar with the biomorphic elements so essential in animistic forms of worship.

RIO GRANDE,
PORTO RICO.

CERTAIN SPECIMENS FROM THE RIVIÈRE COLLECTION

By GEORGE GRANT MacCURDY

ÉMILE RIVIÈRE, who died in Paris in January, 1922, was the last of a group of French prehistorians including such well-known names as Émile Cartailhac, Gabriel de Mortillet, and Edouard Piette. He was an active explorer for forty years (1870-1910), and gave generously of his collections to the museums of his country, especially to the Museum d'Histoire Naturelle, Paris, and the Musée des Antiquités Nationales, Saint-Germain-en-Laye. The remarkable upper palaeolithic skeleton discovered by him in the Cavillon cave east of Mentone is in the former museum, while some of the palaeolithic art objects of his collection went to Saint-Germain. The double burial of two children which gave its name to the Grotte des Enfants, also in Italy, near Mentone, is now in the Institut Catholique, Paris.

Many thousands of specimens of lesser value were still in Rivière's possession at the time of his death. These were sold at auction in May, 1922, at the Hotel Drouot, Paris, by his two sons. Several small but important lots were bid in by the author for the Peabody Museum of Yale University. They represent the following sites: La Mouthe, Combarelles, Rey, Liveyre, Laugerie-Haute, Gorge d'Enfer, Grotte des Eyzies, and La Micoque—all palaeolithic and in the Dordogne; the caves of Mentone (also palaeolithic) in Italy; and two caves in the Alpes-Maritimes, Saint-Benoit (neolithic) and Albaréa (Bronze Age).

Some of the foregoing sites have become well-known through the work of various explorers, but the caves of Rey and Liveyre are scarcely known in the literature of prehistoric archaeology. Rivière's last field work was done at Liveyre, which accounts in part for his failure to publish more than a mere notice. Rey

fared somewhat better; but both caves are worthy of additional notice. Some of the material from Laugerie-Haute, La Mouthe, and La Micoque is also selected for a brief description.

Rey.—The cave of Rey is in the commune of Les Eyzies-de-Tayac (Dordogne). It opens at a point only about 40 m. from the entrance to the cavern of Les Combarelles, one of the great galleries of palaeolithic art. Rivière was one of the first to explore these two sites. He explored the right corridor near the entrance to Combarelles in 1892-94, before the discovery of the mural engravings in the long corridor on the left. During the same period he completely excavated the floor deposits at Rey. A culture sequence can be determined for both sites, based in part on the work of Rivière, and in part on that of Peyrony:

Rey	Combarelles
3. Solutréan	4. Middle Magdalenian
2. Aurignacian	3. Lower Magdalenian
1. Mousterian	2. Solutréan
	1. Aurignacian

It will be seen from the above that Rey was the first to be inhabited and the first to be vacated. For a portion of the Aurignacian and Solutréan epochs, the two sites were occupied no doubt simultaneously, and artists from Rey might well have assisted in the execution of some of the earliest engravings at Combarelles.

The palaeolithic industrial and art objects from Rey include implements of flint and bone, javelin points of reindeer horn, bone tallies, perforated teeth of ruminants and *Carnivora*, perforated shells (*Nassa neritea*, *N. gibbosa*, and *Turritella communis*), pendants of bone and talc, worked pieces of ivory and of reindeer bone, and portable art. Rivière's finds included a bone point 33 cm. in length, finely worked and in perfect condition.

The Yale collection includes ribs split in the plane of their maximum dimensions, pitted on one face and notched along the polished margins, which might have been used for keeping tally (Fig. 18, *b*); the shell of *Nassa neritea*, perforated by means of faceting; a perforated fish vertebra; the clavicle of *Felis* perforated at one end (Fig. 18, *a*); perforated incisors of *Bos* (Fig. 19, *c*); perforated canines of *Cervidae*; perforated and notched incisors

of a small ruminant (Fig. 19, *a*, *b*, *d*, *e*); and two pendants of greenish talc and bone respectively (Fig. 20, *b*, *c*). The bone pendant had undergone the action of fire.

FIG. 18.—*a*, clavicle of *Felis* perforated for suspension; *b*, split rib with marginal tally marks and central pitted area. Cave of Rey (Dordogne). ¾. Yale Univ. coll. cat. nos. 7108, 7109.

The most important specimens found by Rivière at the cave of Rey are two sculptured figures of the fish (probably salmon) each carved from a ruminant rib split in the plane of its maximum dimensions. In one of the two specimens the entire fish is represented with a high degree of artistic skill (Fig. 21). In the other only the posterior half of the fish is indicated and in a summary fashion. Whether the artist intended to take up the piece later and finish it, or left the unfinished work to be completed by the imagination will remain in the realm of conjecture. Objects of this sort were probably talismanic; in the field of magic a part might well be as efficacious as the whole (Fig. 22).

The palaeolithic artist chose his models almost wholly from the animal kingdom, with predilection for forms that would add to his food supply. Mammals predominate, with the horse, reindeer, bison, wild goat,

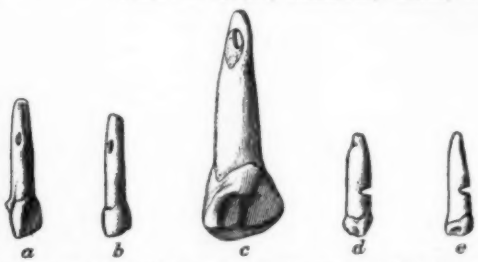

FIG. 19.—Perforated and notched teeth from the cave of Rey (Dordogne); *a*, *b*, *d*, and *e*, small ruminant; *c*. *Bos*. ½. Yale Univ. coll. cat. nos. 7110, 7111.

red deer, cave bear, *Bos*, and mammoth well in the lead. Figures of such dangerous animals as the cave lion and wolf are also met with.

Birds and fish play a less important rôle in cave art. The author has been able to list some fifty works of cave art dealing with representations of the fish in addition to the foregoing from Rey. Trout, salmon, pike, flounder, and other kinds are included in the list.

In their classic work,[1] Lartet and Christy reproduce the figure of a fish (thought to be carp) on both sides of a cylindrical piece of reindeer horn from the rock shelter of La Madeleine (Dordogne). Dupont[2] reproduces the figure of a trout engraved on a baton of reindeer horn from the cavern of Goyet, Belgium. Louis Lartet and Chaplain-Duparc[3] found the engraved figure of a pike on a perforated canine tooth of a bear in the Duruthy cave near Sordes (Landes).

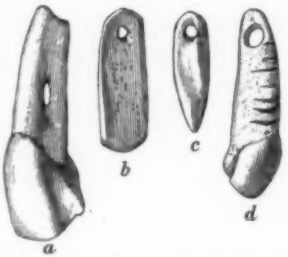

FIG. 20.—Perforated and incised teeth of *Bovidae;* stone and bone pendants. *a* and *d*, Laugerie-Haute; *b* and *c*, Cave of Rey. ½. Yale Univ. coll. cat. nos. 7127-7130.

The best known example is the group of several salmon in juxtaposition with two stags and a hind, the whole scene engraved on a baton of reindeer horn with the artist's mark (two lozenge-

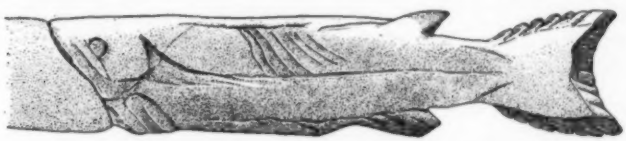

FIG. 21.—Rib bone of a ruminant carved at one end to represent a fish. From the cave of Rey. Original in the National Museum at St.-Germain. After É. Rivière. ½.

shaped figures) affixed. This valuable specimen was found in the cave of Lortet (Hautes-Pyrénées).[4] Piette reports an additional representation of the fish from the same locality. It is engraved on both faces of a flat piece of bone with the field cut away beyond the contour line (*gravure à contours découpés*).[5]

[1] Reliquiae Aquitaniae, B pl. II, fig. 1.
[2] Matériaux, v, pl. 16.
[3] Matériaux, 2e sér., IX, 101, 1874.
[4] E. Piette, L'Anthropologie, XV, 160, 1904.
[5] L'Art pendant l'âge du renne, pl. X, no. 3.

In the Féaux collection at Périgueux, there is an engraving of a fish on an antler of *Cervidae* from the rock shelter of La Croze-de-Tayac at Les Eyzies, in the same commune as the cave of Rey. This specimen was reproduced by Rivière.[6]

Cartailhac and Breuil[7] found two figures of the fish (trout) incised in the compact clay of the floor of the diverticulum at the entrance to the Salon Noir in the cavern of Niaux (Ariège).

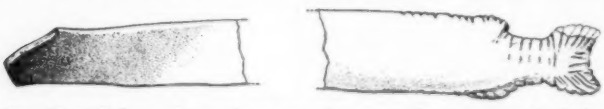

FIG. 22.—Rib bone of a ruminant carved at one end to represent the body and tail of a fish. Magdalenian from the cave of Rey. ¾. Yale Univ. coll. cat. no. 7107.

In the Vibraye collection at the Museum d'Histoire Naturelle, Paris, there is the figure of a pike engraved on the fragment of a reindeer lower jaw that was found at Laugerie-Basse.[8] Some sixteen other examples of the fish engraved on bone and reindeer horn have been reported from Laugerie-Basse, chiefly by Girod and Massenat.[9] In one of these, a fish (probably salmon) is associated with the figure of an otter on the same piece of reindeer horn.

A splendid figure of a salmon in low relief was found by Maurice Marsan in 1912 on the ceiling of a little cave at Gorge d'Enfer (Dordogne). This cave, since known as the Grotte du Poisson, was recently purchased by the French Government and listed as a national monument.

Breuil[10] has reproduced javelin points from the cave of Placard (Charente), decorated with stylistic punctate figures, some of which represent the fish. One of them resembles the flounder in shape but the eyes are not indicated. The best representation of the flounder known to cave art is the small

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[6] Assoc. française pour l'Avancement des Sciences, Ajaccio, 1901; Lyon, 1906.

[7] C. r. Acad. des Inscr. et Belles-Lettres, 213, 1907.

[8] Paul Girod: Les stations de l'âge du renne dans les vallées de la Vézère et de la Corrèze. Stations Solutréennes et Aurignaciennes, pl. 31.

[9] Matériaux, XIII, 395, 1878.

[10] Congr. Intern. d'Anthr. et d'Arch. préhs., Geneva, I, 194, 1912.

engraving on bone with contours cut away, which was found recently by Count R. de Saint-Périer[11] in Magdalenian deposits of the Grotte des Boeufs at Lespugne (Haute-Garonne). In the Grotte des Harpons, also at Lespugne, he found a piece of bone decorated with engraved figures of a fish, horse, antelope, and bear (head only and viewed from the front). A bone chisel from the cave of La Mairie at Teyjat is decorated with an engraving of a fish.[12]

A representation of a marine fish has been reported[13] from the cavern of Pindal (Asturias) on the northern coast of Spain. It is engraved on the cavern wall and resembles a Spanish mackerel or tunny-fish in the large crescent-shaped caudal fin, whereas the ventral fin should be placed further forward on the thorax.

Mention should also be made of the engraving of a fish from the cave of Arlay near Lons-le-Saulnier (Jura), reported by Girardot.[14]

The engraving of a fish on reindeer horn from Fontarnaud (Labrie collection) is of unusual interest because the fish is represented as biting at something suggesting a barbed hook.[15]

In the cave of the Mammoth at Wierzchow, Poland, Zavisza[16] found an engraving of a fish on the rib of a reindeer.

Several mural engravings of the fish are reported by Breuil, Obermaier, and Verner from the cavern of La Pileta (Malaga); one of these is 1.5 m. long and represents a large marine species, probably a plaice or a brill (La Pileta, pp. 37-39, Monaco, 1915).

Breuil[17] found a mural figure of a fish in color at Las Batuecas, Province of Salamanca, Spain. This is the fifth instance to be noted where the fish occurs in parietal or stationary art.

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[11] Bull. Soc. préh. française, July 25, 1912, pl. I.

[12] Capitan, Breuil, Peyrony, et Bourrinet, Rev. École d'Anthr., XVIII, 169, 1908.

[13] Alcalde del Rio, Breuil, et Sierra: Les cavernes de la région cantabrique, p. 67, and pl. XLIII, Monaco, 1911.

[14] Assoc., franç. pour l'Avance. des Sciences, Besançon, I, 280, 1893.

[15] Breuil, L'Anthropologie, XIX, 190, 1908.

[16] Mém. Soc. d'Anthr. de Paris, 2e sér., I, pl. XII, 1873.

[17] L'Anthropologie, XXIX, 2-27, 1918–19.

A ramus of the lower jaw of the horse found in the cavern of Kostelik (Czecho-Slovakia), by M. Kriz,[18] was so carved as to represent a fish.

Bergougnoux[19] found the representation of the tail of a fish on reindeer horn in the rock shelter of Les Cambous (Lot). The specimen is in the Museum at Cahors.

Cazalis de Fondouce[20] reports figures of the fish and horse on bone from the cave of Salpetrière at Pont-du-Gard (Gard).

One of the examples of portable art from the cavern of Trois-Frères (Ariège) is the figure of a fish on bone, found by Count Bégouen.

In his original memoir on the station of Bruniquel (Tarn and Tarn-et-Garonne), Cartailhac[21] reproduces the figure of a fish engraved on bone from the Chateau rock shelter.

Three examples of the fish have been reproduced from the cave of Mas d'Azil (Ariège). According to Piette,[22] one of these, carved from reindeer horn, is represented as having been pierced by a harpoon. The other two examples are on reindeer horn and bone, respectively.

F. Mascaraux[23] found a fish carved from ivory and one engraved on reindeer horn in the cave of Saint-Michel d'Arudy (Basses-Pyrénées).

The latest discovery to be reported is that of E. Passemard[24] in the cavern of Isturitz (Basses-Pyrénées). The figure of a fish (trout or salmon) is engraved on a baton. In this case, as in several others, the vertebral column and ribs are indicated by incised lines.

Perforated fish vertebrae were often used as beads during the cave-art period. Rivière reproduces a necklace composed of twenty-four salmon vertebrae from one of the Mentone caves. The remarkable necklace found by Verneau with one of the skeletons (the young man) composing the triple burial at Barma

[18] Mitt. der Anthr. Gesellsch. in Wien, XI, 98, 1881; L'Anthropologie, X, 257-281, 1899.

[19] Les temps préhistoriques en Quercy, 33, 1887.

[20] Matériaux, VII, pl. II, 1871.

[21] L'Anthropologie, XIV, 146, 1903.

[22] L'Anthropologie, VI, 284, 1895.

[23] Revue de l'École d'Anthr., XX, 376, 1910.

[24] Revue Archéologique, XV, 1-45, 1922.

Grande cave, Mentone, was made up of a happy combination of canine teeth of the deer, univalve shells (*Nassa neritea*), and fish vertebrae. Cave Rey, where Rivière found the two figures of the fish sculptured in bone, also yielded perforated vertebrae of the fish.

One of the batons of reindeer horn found at La Madeleine by Lartet and Christy[25] has a marginal decoration closely resembling a series of fish vertebrae in their anatomic relation.

In Europe there are some fifty palaeolithic stations in which harpoons of reindeer horn have been found. These may well have served in fishing for salmon and pike. It is an interesting fact that of the twenty-seven sites above enumerated where figures of fish have been found, harpoons have also been found in at least fourteen, viz., Arlay, Arudy, Bruniquel, Les Cambous, Goyet, Isturitz, Kostelik, Laugerie-Basse, Lespugne, Lortet, La Madeleine, Mas d'Azil, Sordes, and Teyjat. At Teyjat the harpoons and engraving of a fish came from the same Magdalenian level. Some of the other thirteen, Rey for example, were not inhabited during the harpoon-making epoch.

Liveyre.—The shallow cave, scarcely more than a rock shelter, on the property of the Count de Fleurieu, Commune of Tursac (Dordogne) was first noted by Lartet and Christy.[26] They stated that it had already been almost completely emptied at a date prior to the memory of the local inhabitants. In the face of such a statement, Rivière deserves credit for having spent several seasons (1900-1904) there and in determining two horizons, viz., Solutréan and Magdalenian. Remains of the mammoth, reindeer, and horse were plentiful in the Solutréan deposit, while the reindeer was dominant in the Magdalenian horizon.

Rivière seems to have been much disturbed by almost nightly vandalism at the cave, especially during the last season's work. A reindeer horn with a superb series of engraved animal figures was said to have been stolen from the site during the night and sold immediately thereafter.

From the Magdalenian level, Rivière obtained a large quantity of flint implements, also tools and weapons of bone and antler

[25] Reliq. Aquit., B. pl. IV.

[26] Revue Archéol. N. S., IX, 237, 1864.

of *Cervidae*. Ornaments are represented by perforated teeth. Among the stone implements found in the Solutréan level, Rivière makes special mention of a point of quartz crystal beautifully chipped on both faces.

The Yale collection of flint implements from Liveyre includes 76 of Solutréan age and 120 of Magdalenian age. The Solutréan types represented are: (1) points with a lateral notch at the

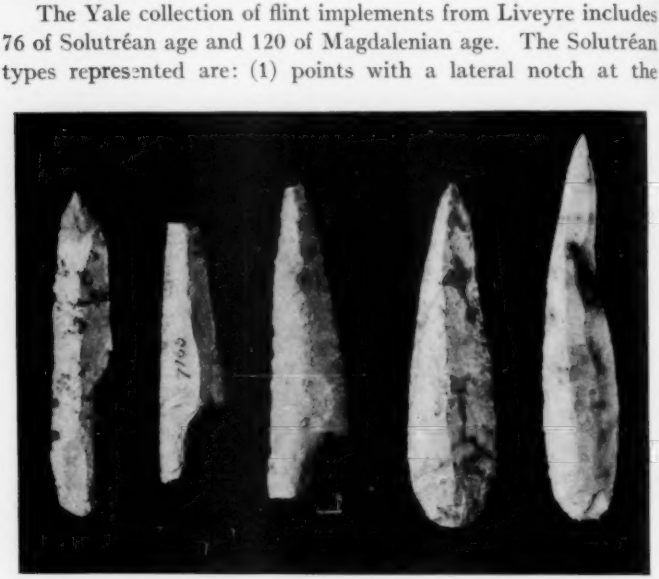

FIG. 23.—Solutréan flint implements from the cave of Liveyre. ¾. Yale Univ. coll. cat. no. 7166.

base (pointe-à-cran), some chipped on one face only and some on both faces; (2) ovate points with a minimum of chipping on the under or bulb face, and somewhat more extended chipping on the upper face (Fig. 23). The list also comprises a pedunculate point of the Font-Robert type, drills, blades, duckbill scratchers, and a few simple gravers. The Magdalenian series is made up largely of gravers, blades, and drills.

Maurice Bourlon[27] also seems to have done a little exploring at Liveyre; at least he reported on a small collection that came

[27] L'Homme préhistorique, p. 39, 1906.

into his possession about 1905, before he had met Rivière. In addition to a few Solutréan flints, Bourlon mentions Magdalenian engravings and implements of bone, figuring two of each. The most important specimens in his collection are: (1) a perforated wolf's tooth; (2) an ivory javelin point with a double bevel at the base; (3) a long (18 cm.) bone javelin point with three poison grooves; (4) a long bone needle with eye; (5) a paint pot made of a fossil shell and partially filled with red ocher; (6) a fine crayon of red ocher; (7) a baton of reindeer horn decorated with a crude engraving of an animal head; (8) a handsome limestone pendant with double conical perforation, twenty-one marginal notches, and the head of a reindeer engraved on one side; and, finally, (9) a perforated pendant of schist with incised animal figures (reindeer, wild goat, and the head, perhaps, of a bison) on both sides.

Laugerie-Haute.—This is one of the classic stations explored by Lartet and Christy in 1863. Later, in their turn came De Vibraye, Girod and Massenat, Rivière, Capitan and Breuil, Hauser, and finally Peyrony who has had charge of the site since it was purchased by the Government for a national monument.

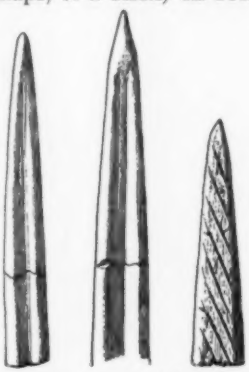

FIG. 24.—Pointed implements of reindeer horn, two with longitudinal groove (presumably for the outflow of blood) and one with small oblique grooves. Bases missing. ¾. Laugerie-Haute. Yale Univ. coll. cat. nos. 7125, 7126.

The specimens found by Rivière at Laugerie-Haute and now in the Yale Museum comprise: javelin points and spatulae of reindeer horn, bone needles, a javelin point of ivory, harpoons and a baton of reindeer horn, stone pendants, perforated teeth of *Bos*, the head of a horse engraved on a piece of young reindeer horn, and two mammoths incised on reindeer horn.

Javelin points are of frequent occurrence in palaeolithic stations. Those found at Laugerie-Haute are not unlike the ones reported from Austria, Moravia, Spain, and Switzerland.

Two of the three reproduced in Fig. 24 are provided with a longitudinal groove presumably to facilitate the outflow of blood. Identical examples were found in Gudenus cave, Lower Austria. The third number in Fig. 24 is almost covered by a series of small shallow oblique parallel grooves. The base is missing from all three of the specimens.

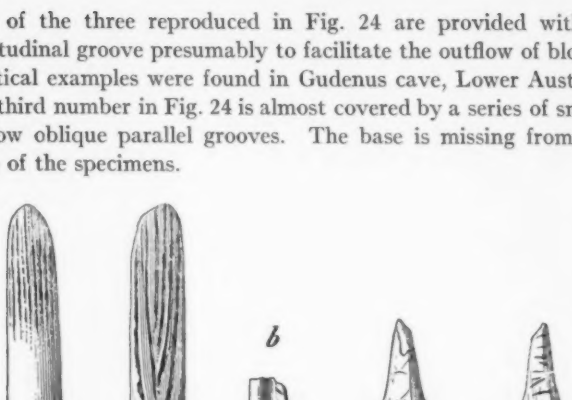

FIG. 25.—Incised implements of reindeer horn from Laugerie-Haute. ⅔. *a* is a javelin point with flutings at the base; *b* is part of the shaft of a dart thrower. Yale Univ. coll. cat. nos. 7132, 7133, 7131.

Fig. 25, *a*, represents the basal end of a javelin point. The single bevel at the butt (pointing upward) is marked by six shallow grooves gently converging in the direction of the point (missing). The convex unbeveled face at the butt bears parallel, longitudinal incisions. The specimen seen in Fig. 25, *b*, is either the middle section of a javelin head (point downward), or of a dart-thrower near the crochet end (also downward), more likely the latter; for F. Mascaraux found at Saint-Michel d'Arudy (Basses-Pyrénées) a dart-thrower of reindeer horn with identical

decoration, and of approximately the same size. An artificial midrib on the outer face is marked by incisions. Examples similar to Fig. 25, *a* and *b*, have been found in various stations including: La Mouthe (see Fig. 30, *b*), Laugerie-Basse, Brassempouy, Mas d'Azil, and Altamira. Fig. 25, *c*, is an implement of reindeer horn that has been flattened on the inner face. Both faces are marked by series of roughly parallel incisions, with here and there cross incisions especially on the outer face. Near one end there is an artificial protuberance showing only on the outer convex face.

The two spatulate implements of reindeer horn, shown in Fig. 26, bear incisions, some roughly parallel, others zigzag. These were evidently obtained from the Magdalenian horizon. The perforation in an incisor of *Bos* (see Fig. 20, *a*) is placed about half way between the tip of the root and the base of the crown—an unusual position. The root of a tooth of *Bovidae* (see Fig. 20, *d*) is marked by two series of transverse parallel incisions.

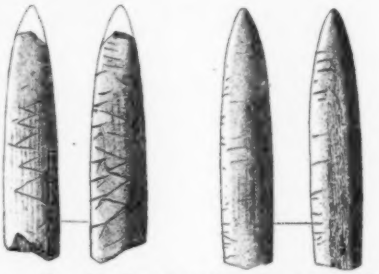

FIG. 26.—Spatulae of reindeer horn with incised decoration. Magdalenian. Laugerie-Haute. ¾. Yale Univ. coll. cat. nos. 7135, 7134.

The rock shelter of Laugerie-Haute is poor in art objects as compared with the neighboring station of Laugerie-Basse. In his Repertory of Quaternary Art, Reinach gives 164 examples[28] from the latter station and only two from Laugerie-Haute—a baton of reindeer horn with a series of fine stag heads in profile (Peyrony collection) and the engraving of what seems to be a glutton, also on reindeer horn. During the season of 1922, Peyrony found three additional examples of cave art at the latter station: (1) the head of a musk ox (*Ovibos moschatus*)

[28] Nearly a score of additional examples were published in 1916 by Bourlon and Breuil.

carved in the round from limestone; (2) bas reliefs on limestone, one of which represents the head of an antelope (early Magdalenian); and (3) engraving of an *Equidae* on limestone (Solutréan). It is therefore a bit of rare good fortune for the Yale Museum to possess two examples from Laugerie-Haute.

One of these is the head of a horse engraved on a piece of young reindeer horn (Fig. 27). The really fine head proportions are lost in the illustration because the round surface of the horn makes the diameter of the head at the level of the angle of the lower jaw entirely too small. If the head had been copied as it would appear on a plain surface, the effect would be true to nature and would compare favorably with some of the best known cave figures of the equine head. The muscles of the lower jaw are emphasized in true Magdalenian fashion. The nostril is dilated; hair hangs from the lower jaw just back of the lip region, and incisions, presumably representing hair, occur regionally on both upper and lower jaws. The convex surface of the piece outside the head contours is almost covered by incisions similar to those on the head except that they do not conform to a given plan of orientation. The two long incised lines seem to bear no definite relation to the decoration as a whole.

FIG. 27.—Fragment of reindeer horn with incised figure of a horse's head. Magdalenian, from Laugerie-Haute. ½. Yale Univ. coll. cat. no. 7136.

The head of the horse was a favorite theme with the cave artist. Piette[29] reproduces a pair of heads engraved on bone (from Mas d'Azil), similar to the foregoing, and the picture is framed above and below by a herring-bone pattern. The same pattern is found on the lower jaw of the well-known horse head from Saint-Michel d'Arudy[30] and also on one from Brassempouy. The head of an *Equidae* engraved on the flat surface of a sacral vertebra, also from Brassempouy, has long hair pendent from

[29] L'Anthropologie, XVII, 33, 1906.
[30] Idem, ibid., p. 29.

the lower jaw (on the articular face of the same vertebra a seal is represented in low relief). The favorite example is the head of a neighing horse from Mas d'Azil.[31] Here again the representation of hair and muscles is in the same style as that in the Yale specimen. Sculptured heads of the horse, perforated for suspension and probably employed as amulets, have been found at Brassempouy, Lourdes, and Mas d'Azil.

The other example of cave art from Laugerie-Haute, now in the possession of the Yale Museum, is a representation of two figures of the mammoth incised on reindeer horn. Although fragmentary, both figures are unmistakable. The profile of the larger and better figure, from the tip of the recurved proboscis to the lumbar region, with head and dorsal domes heightened by the deep intervening notch so characteristic of the species *Elephas primigenius*, is especially fine (Fig. 28). The tusks are made to appear as if seen from above instead of in profile. Patches of long hair are indicated on both head and body. The smaller figure is inverted and faces the recurved portion of the other's proboscis. The piece was found in lower Magdalenian deposits under the Leyssalle house, the official residence of Mons. Peyrony since the property came into the possession of the French Government; Rivière had collected the piece prior to 1901, at which time Breuil first saw it and recognized the two figures of the mammoth. After Rivière's death and before the sale of the

FIG. 28.—Fragment of reindeer horn with unrolled engraving of two mammoths. From the lower Magdalenian of Laugerie-Haute. ½. After Breuil. Yale Univ. coll. cat. no. 7138.

[31] Idem, ibid., xv, 142, 1904.

collection, permission was given to Breuil to make the sketch here reproduced.

La Mouthe.—The story of La Mouthe is inseparably linked not only with the name of Rivière, but also with the first general recognition of parietal cave art in France as of palaeolithic age. In addition to mural art both incised and in color, the floor deposits of the cavern of La Mouthe have yielded important human relics including a decorated stone lamp. The culture sequence of the floor deposits is as follows:

5. Neolithic
4. Magdalenian
3. Solutréan
2. Aurignacian
1. Mousterian

FIG. 29.—Painted pebbles, Azilian Epoch. *a* and *b* from Mas d'Azil; *c* reported to have been found in the cave of La Mouthe. ⅔. Yale Univ. coll. cat. nos. 7312, 7161.

There is reason to believe that the Azilian epoch may also be represented (between the neolithic and the Magdalenian), for attached to one of the *cartons* purchased for the Yale Museum was a typical painted pebble—a thin flat pebble, oval in outline with red ocher applied along the entire margin and on three spots of one face only. The dimensions are 7.5 by 4.0 by .8 cm. (Fig. 29, *c*).

Other specimens in the Yale collection from La Mouthe are: javelin points of reindeer horn, pointed implements of bone, worked fragments of reindeer horn, bone tallies, bone needles of large size and without eye, perforated canine teeth of

Canis lupus, *Felis*, and *Cervidae*, a bluntly pointed implement of ivory, a crayon of red ocher (Fig. 30, *a*), the beveled basal end of an ivory javelin point (Fig. 30, *b*), two implements of ivory, one of which bears a raised ornamented transverse protuberance and a series of parallel incisions (Fig. 31), and a bone bead. This bead is decorated with four series of transverse parallel incisions (Fig. 32). Two adjacent rows are composed of fifteen incisions each, while the other two, likewise adjacent, are made up of sixteen incisions each. Two pairs of combinations involving comparatively large numbers could hardly have been fortuitous. It would seem as if the cave artist were able to think in sums greater than ten. Zavisza[32] reproduces a similar bead (only longer), even to the four series of incisions, made from the leg bone of a wading bird from the cave of the Mammoth at Wierzchow, Poland.

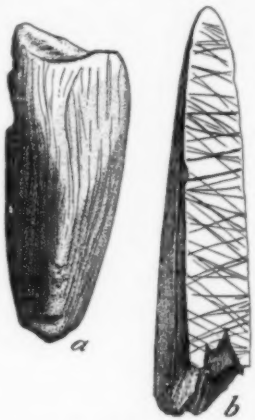

FIG. 30.—*a*, red ocher faceted by scraping; *b*, javelin point of ivory with incisions on flat surface at base. La Mouthe. ½. Yale Univ. coll. cat. nos. 7155, 7154.

FIG. 31.—Baguette of ivory, sculptured and incised. La Mouthe. ⅔. Yale Univ. coll. cat. no. 7153.

An assortment of perforated teeth from La Mouthe is reproduced in Fig. 33. The halving of a canine tooth of the wolf (*Canis lupus*) seems to have been intentional and to have been done prior to the perforation; otherwise the hole would have been run from side to side rather than from front to back. Canines

[32] Mém. Soc. d'Anthr. de Paris, 2e sér., I, pl. XII, 1873.

of *Cervidae* (*b* and *c*), and one of *Felis*, probably lynx (*d*), complete the series.

FIG. 32.—Bone bead from the cavern of La Mouthe. Of the four series of incisions, two have 15 each, and two 16 each. ½. Yale Univ. coll. cat. no. 7160.

La Micoque.—The Yale Museum is so fortunate as to possess some of the first specimens ever taken from the important station of La Micoque, Commune of Tayac (Dordogne), discovered by Rivière in 1895 and explored by him and Chauvet[33] in 1896. Since then the site has been explored by Cartailhac, Capitan, Peyrony, Hauser, Wiegers, et al. La Micoque, a fallen rock shelter, is one of the oldest stations in the Dordogne. The atypic Acheulian horizon at the base is separated from an upper Acheulian horizon by an almost sterile layer of rubbish resembling breccia.

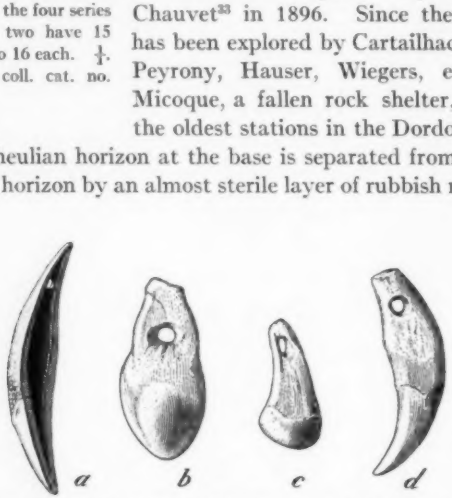

FIG. 33.—Perforated teeth from La Mouthe. *a*, wolf (¾); *b* and *c*, elk (½); *d*, lynx (½). Yale Univ. coll. cat. nos. 7159 (a, b, c).

The fauna of the upper level consists almost wholly of horse, *Cervus*, and *Bos* (no reindeer). The Yale collection also includes a lower jaw of the badger (*Meles taxus*). A bone cist in the region of the left canine had caused the bone to break at that point. According to Cartailhac, the horse, *Bos*, and *Cervus* also occur in the lower horizon. Wiegers is said to have found remains of *Rhinoceros merckii* in this level.

[33] C. r., Acad. des Sciences, Aug. 24, 1896.

The flints from La Micoque are very much altered, chalky in appearance, and friable. The worked flints from the lower level are crude, hardly permitting of classification into the usual Acheulian types. The Yale series from the upper level includes practically every known type: blades, points, side scrapers (*racloirs*), and cleavers (*coups-de-poing*). Some of the cleavers are unusually small with delicate retouches on one or both faces, but relatively thick at the base. The finest and largest example is the lanceolate cleaver reproduced in Fig. 34. Chips have been removed from the entire surface of both faces except for a small bit of nodular crust near the base. The piece may well be chosen as the Micoque type of cleaver.

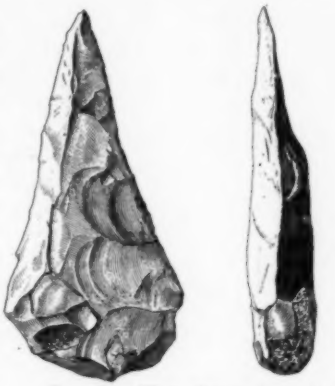

FIG. 34.—Flint cleaver from La Micoque (Dordogne), Upper Acheulian. ½. Yale Univ. coll. cat. no. 7169.

YALE UNIVERSITY,
NEW HAVEN, CT.

BOOK REVIEWS

METHODS AND PRINCIPLES

Language; an Introduction to the Study of Speech. EDWARD SAPIR. New York: Harcourt, Brace & Co., 1921. vii, 258 pp.

Three distinct types of public may be considered by the writer of a treatise on the fundamentals of language—the nondescript general reader, the ethnologist, and the specialist in linguistics. It is true that since few ethnologists are more than laymen in the field of language, the first two classes largely coincide. Nevertheless, the theoretically-minded students of culture will view linguistic phenomena with a peculiar interest and must inevitably draw some parallels between the problems arising in this sharply demarcated province of the social heritage and in the grand totality of culture; and accordingly they may be legitimately reckoned of a separate category.

In the reviewer's opinion Dr. Sapir felicitously solves the problem of appealing to this triple audience. Regarded from the point of view of the laity, his book represents a remarkable achievement in popularization on a very high plane. Relying to an appreciable extent on examples culled from English speech, he succeeds in illustrating the more important processes operative in the history of language. Even the complete novice, provided he is willing to devote some concentrated thinking to the task, will gain a considerable insight into the psychological and historical determinants affecting the growth of speech-forms. He will probably learn with astonishment what far-reaching changes in morphology can be initiated by a sound-shift; and with presumably even greater amazement, how varied are the means by which thought may be symbolically represented in speech, what totally different aspects of reality may be singled out for distinction by different languages. New vistas of another order are likely to rise before him: the relations of thought and speech, of literary style and its linguistic basis, will appear in a new light, while time-honored fallacies, such as those of a close connection between race and language, or between linguistic types and definite stages of civilization, will fade away.

The theoretically minded ethnologist will find many of his own problems illustrated in novel fashion within the linguistic field—especially so far as they belong to the historical category. Is there such a thing as orthogenetic evolution in culture? Well, in its linguistic compartment, at any rate, Dr. Sapir discovers a definite "drift"—a tendency, moreover, that may persist in languages long after their separation from the parental stock (p. 184), though certainly there is no mystic agency that impels speech towards a predetermined goal: English may become more and more analytic without assuming the character of Indo-Chinese (p. 180). Of tremendous significance in the light of the blatant proclamations of Professor Elliot Smith and the Graebnerian school, are the author's observations on linguistic parallels. Speaking of the principle of concord as noted in Chinook and Bantu, he remarks (p. 122):

> It is impressive to observe how the human mind has arrived at the same form of expression in two such historically unconnected regions.

Again (p. 152 f.) he discovers noteworthy similarities between Takelma and Greek,

> languages that are as geographically remote from each other and as unconnected in a historical sense as two languages selected at random can well be.

Quite generally, we are told that

> broadly similar morphologies must have been reached by unrelated languages, independently and frequently (p. 128);

through what elusive instrumentalities remains a question for the future. But as their variety demonstrates, the formal patterns of languages are quite arbitrary, as much so as, say, certain mythological conceptions; and what applies to the one department of culture must be held to obtain for the other until the champions of the "historical" schools deign to prove the contrary. Those of us, therefore, who while fully alive to the importance of diffusion are not convinced of the impossibility of independent evolution in a limited way will take no small comfort from Dr. Sapir's findings. Another side of his historical thinking will be discussed below.

Speaking tentatively and under correction concerning the professional linguist's attitude, I feel that his attention will be arrested by a number of distinctive features in the book before us. First of all, it has a definitely anthropological orientation. Dr. Sapir, starting from a mastery of the philological technique elaborated and perfected in the Indo-Germanic domain has extended its principles through

original field-studies to the languages of American Indians, while simultaneously keeping abreast of the corresponding labors of, say, Meinhof in Africa and of Father Schmidt in the Southeast Asiatic field. The significance of this characteristic becomes clearer when we compare Dr. Sapir's volume with its namesake, still more recently published by Professor Jespersen. There is much sanity in the few pages the Danish scholar devotes to the tongues of primitive peoples, but after all they provide only the border embellishment for the fabric of his philosophy of speech. His ideas, in other words, were formed by researches in the familiar channels and merely found subsidiary exemplification in more exotic spheres. Sapir's views, on the contrary, are cast in a single mould; they are the outcome of a broad-gauge survey of language as such, whether spoken by primitive or lettered peoples.

It must, accordingly, be of peculiar interest to students of language to familiarize themselves with the more general notions evolved on the basis of so wide an inquiry as underlies this little book, even though its space limitations allow no more than a brief exposition, precluding scientific demonstration. Two points merit special attention—the author's classificatory scheme, and his views on the interrelations of distinct languages.

As for the former, it may again be well to contrast Sapir's book with Jespersen's. Jespersen no less than Sapir rejects the traditional tripartite scheme of isolating, agglutinative, and inflectional categories (*Language*, pp. 76–80) but his conclusion that "the structural diversities of languages are too great for us to classify them comprehensively" bears the unsatisfactoriness of all unqualified agnosticism. Sapir, proceeding from a provisional to a revised tabulation of the concepts denoted by grammatical processes (pp. 92 f., 106 f.), groups languages according to their expression of these concepts. The basic query he propounds is, whether a language keeps "the basic relational concepts . . . . free of an admixture of the concrete"; and this leads to a dichotomy into pure-relational and mixed-relational languages. Each of the resulting categories is, then, subdivided into a simple and a complex class, these sub-types being distinguished by the absence or the use of inseparable elements in building up concrete ideas. The conventional terminology, however, is not wholly discarded but merely degraded to the rank of an auxiliary device for characterizing an agglutinative or other trend.

I confess myself wholly incompetent to appraise the value of this scheme, which I must add in justice to its author is put forward in

quite undogmatic fashion (p. 153). However, I am impressed by the provisional historical evidence cited in favor of the proposition that we are here dealing with phenomena coming nearer the essentials of speech than those envisaged by earlier classifiers and I shall eagerly await the verdict of those entitled to a professional judgment. Should Dr. Sapir's views stand sustained, it is quite clear that they would constitute a landmark in the progress of linguistic science.

Finally, a word or two must be devoted to Dr. Sapir's ideas on historical relationships. To put the matter briefly, he accepts of course the borrowing of foreign words, admits the diffusion of phonetic features "over a continuous area in somewhat the same way that elements of culture ray out from a geographical center" (p. 213), but finds no historical evidence for any but superficial outside influences on morphology (p. 217). This, however, leads to a dilemma, for as a matter of fact important structural traits are distributed over major areas, where they are shared by languages differing so widely as to be reckoned genetically unrelated by orthodox science. Dr. Sapir contends that while some resemblances may be interpreted as due to independent evolution, as set forth above, this explanation no longer holds when the parallels are of too specific a nature. In that case it is necessary to revise the received classification and to shift the boundaries staked out for linguistic families, in other words to regard as genetically connected certain stocks hitherto treated as distinct. Our guide in the re-formulation of the historical grouping must be "contrastive perspective"—the comparative weighting of similarities and dissimilarities obtaining among a series of progressively more divergent languages (pp. 217–220).

It must not be supposed that the somewhat heretical position maintained by Dr. Sapir on historical interrelationships is put forward in obtrusive fashion. Those who know how definitely he adheres in more technical publications to the view outlined will admire the self-restraint exercised in compressing deep-seated convictions within the narrow compass of three pages. Such reverence for the general reader is not common among writers of popular works. This reserve, however, is only typical of the entire book, which is noticeably free from crotchetiness. Indeed, rarely is such freshness of outlook coupled with such judgment and taste. An Attic flavor pervades the volume as a whole. I know of no general work put forth by American anthropological scholarship of which we have more reason to be proud.

ROBERT H. LOWIE

AMERICA

The Archeological History of New York. (Bulletins 235, 236 of the New York State Museum, Albany, 1920.) ARTHUR C. PARKER.

In order to appreciate the significance of Mr. Parker's latest contribution to our knowledge of the archaeology of New York, something of the history of the developments in that field should be taken into consideration.

New York has always been a region fascinating to the student because within its boundaries lie the greatest part of the remains of that important body of aborigines, the historic League of the Iroquois. In earlier days Squier, Hough, Morgan, and Clark did important work on the antiquities of the State, but they were unable to distinguish between the various types of artifacts or of cultures encountered. It was not until 1897, when the dean of Eastern archaeologists, Dr. Wm. M. Beauchamp, brought out the first of his splendid series of publications, the *Archeological Bulletins of the New York State Museum*, that we find, in his "Aboriginal Chipped Stone Implements of New York," the first suggestion that more than one type of culture occurs in the region. Dr. Beauchamp made it plain that certain types of articles, notably the polished slates, are non-Iroquoian in origin, although he was obviously in doubt to whom to refer them, suspecting also that they are non-Algonkian. Dr. Beauchamp likewise recognized the possible existence of a culture resembling that of the Eskimo, and of a possible mound culture. He also, in 1898, called attention to the peculiarities of certain forms of Iroquois pottery, both in New York and Canada.

In 1909 the writer, in a paper entitled "Archeology of the New Coastal Algonkin," Vol. III of the *Anthropological Papers of the American Museum of Natural History*, first gave a definitive account of the typical Algonkian remains of the tidewater region. Later, stimulated by articles on Iroquoian archaeological criteria published simultaneously and independently by Parker and Houghton in the *American Anthropologist* for October-December, 1916, he brought out in 1919 a pamphlet on "The Pre-Iroquoian Algonkian Indians of Central and Western New York," Vol. II, No. 1, of the *Indian Notes and Monographs of the Museum of the American Indian, Heye Foundation*. This paper extended the area of Algonkian occupation and established a series of criteria for the identification of Algonkian sites.

While this work was going on, Mr. Parker, then for some years past State Archeologist, was busily engaged in Iroquois research, but, owing to discouraging conditions, he was in several cases unable to bring his results before the public in time to secure the honor of their discovery. Indeed, the very publication under discussion was itself so delayed that many of his original contributions may appear to those unaware of his difficulties as reiterations of facts already known.

Mr. Parker's first attempt to illustrate cultures in the State Museum was in 1907, but it was not until the new Museum building was completed in 1912 that he was able to make an exhibit explaining and differentiating these. Mr. Parker is therefore one of the first to identify, separate, and describe New York artifacts according to the culture complexes into which they fall. The *Archeological History of New York* was in preparation as early as 1916 and had to be submitted by December 30th, 1917. Delayed by a printers' strike, it did not actually appear until July, 1922, but owing to publication rules, Mr. Parker could not add a single line to the manuscript after its acceptance for publication.

The *Archeological History of New York* is divided into two volumes of which Part I is devoted to the culture horizons and a series of accounts of the intensive exploration of certain typical sites from each occupation.

Mr. Parker describes four principal cultures, the Algonkian, Eskimoan, "Mound-builder," and Iroquoian, and gives criteria for the determination of each. As a matter of fact these cultures are in several cases susceptible of further subdivision; the Algonkian, for example, is divided into: first, archaic, based on the artifacts found in the deposits occurring in lower layers of rockshelters and shellheaps, where pottery is missing or rare; second, middle Algonkian, where artifacts of pure Algonkian type occur; and third, late Algonkian, when Iroquoian influence begins to manifest itself, this period extending up to and beyond the colonization period.

It is during the middle Algonkian period that these people reached their highest development and greatest distribution, the typical artifacts being found beyond the boundaries of New York throughout the Middle Atlantic States, the greater part of New England, southern Ontario, Michigan, Wisconsin, and Minnesota, and thence indefinitely southward, our data for the region from the Ohio Valley south being very meager. In New York State the Algonkians were expelled from the central portion on the arrival of the Iroquois, while

those on the coast received a certain stimulus to work in bone and clay, but stonework, in which the middle Algonkians were masters, decayed. There are also variations in culture between the inland and coastal Algonkians of New York.

Algonkian culture overlaps with the Mound Builder culture as found in New York, there being a decided similarity in the polished slates, chipped flints, and some of the other artifacts in stone and copper found in both. It may be said in fact that Algonkian and Mound cultures present far more points of contact with each other than does either with the Iroquoian.

The Eskimoan culture is undoubtedly an ancient one in New York, but its exact chronological sequence is not yet determined. It may indeed be a local phase of Algonkian of the archaic type. Even recently those northern Algonkians in touch with the Eskimo on the shores of Hudson Bay imitated the characteristic polished slate woman's knives and other articles of the latter.

As Mr. Parker indicates, Iroquoian culture is divisible into a number of local areas, and also into chronological periods. He points out the interesting fact that characteristic Iroquoian sites with their distinctive culture are not only comparatively rare during the prehistoric period, but the earliest known sites tend to blend with those of the Middle Algonkians. This may serve to explain the paucity of early Iroquoian sites outside of the type areas in New York and Ontario, on the basis that the marked Iroquois culture, as we know it, developed after their arrival in their historic seats. Mr. Parker advances the theory that the change was a conscious and deliberate one, fostered by the people in order to set themselves off from their Algonkian neighbors. Mr. Parker backs his theory with historic instances, and it seems perfectly sound and tenable to the present writer.

The rest of Volume I is devoted to a series of papers descriptive of intensive fieldwork on various sites, many of them hitherto undescribed. It is an interesting and important section, and well illustrated. Mr. Parker concludes with some notes on archaeological subjects which are of interest.

Volume II is composed of a list of archaeological sites in the State of New York, and is the weakest part of this monumental work. The list closely follows that published by Beauchamp in 1900, even repeating most of the errors contained in that pioneer attempt. The data are brief, often entirely too brief, and while the volume is not

without merit, one cannot help feeling that the author's interest lies elsewhere. The identification of some of the sites, especially those in Cayuga County, is often erroneous, as the reviewer knows from personal experience.

All in all, this is the most ambitious and best paper hitherto published on the archaeology of the region and is likely to stand as such for many years to come. It sets a standard of merit that American scientists may well follow in the study and discussion of the archaeology of any part of our continent. The State of New York is to be congratulated on having so able and erudite a student of its early inhabitants as Mr. Parker, who has proved by the present volumes that he is not only the foremost exponent of Iroquois archaeology and ethnology, but that he also has a thorough conception of the principles of Algonkian, Eskimoan, and Mound Builder culture.

ALANSON SKINNER

Inca Land, Exploration in the Highlands of Peru. HIRAM BINGHAM. Boston and New York: Houghton, Mifflin, & Co. 1922. 365 pages.

This, the latest publication by Professor Hiram Bingham, is a very notable contribution to our increasing knowledge of Andean history. In parts it is geographical, in other parts archaeological, in still other parts ethnological, and as a whole it is of interest to all sorts of anthropologists.

The first four chapters, pages 1 to 94, are predominantly geographical in character, being vivid, yet accurate, descriptions of the country in southern Peru. Especially entertaining, yet not lacking in serious interest, is the description of the reputedly "bottomless" Flamingo Lake, which turned out to be fifteen feet deep in its deepest part (pp. 74–77).

Chapter V, pp. 95–109, entitled "Titicaca," contains some very valuable notes on the ruins of pre-Incaic date which abound in the vicinity of Lake Titicaca. Particularly praiseworthy are the remarks concerning the absurd notions of Herr Posnansky of La Paz (pp. 98–100). In this same chapter are some valuable data on the present condition of the Indians in that district.

In Chapter VI, pp. 110–132, "The Vilcanota Country," ethnological data are found again, together with archaeological, historical, and geographical. The name, it should be noted, ought to be written "Vilcañota," the ñ being too often lost to sight by American writers. Very noteworthy is the lower of the two pictures facing p. 120, for it

shows Indian men and women tilling the soil in precisely the same way that we see them in the inimitable pictures which adorn the manuscript of Felipe Guamán Poma de Ayala, written in or prior to 1613. Notable again is the picture of the temple of Viracocha at Racche, described on pp. 129–132. It is the highest wall of any age in Peru. Unfortunately it is fast tumbling to pieces.

Chapter VII, pp. 133–156, "The Valley of the Huatanay," describes some minor archaeological sites in the neighborhood of Cuzco. But this chapter is especially creditable to its author on account of the fact that in it he makes a very frank avowal of past errors committed by him and others in connection with certain bones which were found in a gully near Cuzco. Prof. Bingham, some eight or ten years ago, was very much laughed at on account of his claim that those bones were as many as 40,000 years old. The wish was father to the thought. Now, after clearly presenting the evidence bearing upon the matter, Prof. Bingham candidly admits that his "Cuzco Man" is only 200 years or so old. If scientists would always be so manly in confessing their mistakes, we should get along more rapidly.

Chapter VIII, pp. 157–169, "The Oldest City in South America," is a brief description of modern Cuzco, a quaint and charming city made quite unique by its peculiar blending of ancient and new, Indian and European elements.

Chapter IX, pp. 170–197, "The Last Four Incas," is a succinct account of the four post-Conquest "Incas," Manco, Sayri Tupac, Titu Cusi, and Tupac Amaru I. They lived and wrought between 1534 and 1572. Of these four, the first was the most gallant and daring, the last the most pathetic. Sayri Tupac and Titu Cusi were relatively nonentities. To some it will seem somewhat sarcastic on Prof. Bingham's part to hail them all as Incas. It is true that Manco, as a legitimate son of the great Inca Huayna Capac, and crowned as a puppet sovereign under Spanish auspices, did partake to some extent of that character of Incaship which his ancestors had worn. But all the others were hardly more than refugees and pretenders grasping feebly the shadow of once solid power. Bingham's description of the events of this period in Peruvian history is excellent, though one cannot help wondering why he persists in quoting Rycaut's edition of Garcilaso de la Vega instead of Markham's. The only advantage of the former is that its spelling is more quaint than that of Markham. It is also somewhat odd that, on p. 184, Prof. Bingham should repeat a misspelling of the Spanish name "Melchor," writing it *Melchior*.

Were it not for the general high level of excellence of the book these minor points would not be conspicuous.

Between pp. 186 and 187 is a large two-page photograph of the Yucay valley. Of all the magnificent photographs which we have been given during many years past by Dr. Bingham this is one of the finest. More than that, it is also one of the most useful, for it shows to anyone desirous of knowing, all the chief features of a typical highland valley in the Andes, and it teaches more than do a score of pompous monographs loaded down with maps and diagrams.

Only in 1572 was the downfall of Tupac Amaru I brought about by the redoubtable Viceroy Don Francisco de Toledo. To his everlasting disgrace, Toledo caused, quite unjustly, the death of the young Inca, a death not avenged until more than two centuries later, when Tupac Amaru II led the first systematic war against Spanish rule in Peru.

Chapter X, pp. 198–216, "Searching for the Last Inca Capital," Chapter XI, pp. 217–240, "The Search Continued," and Chapter XII, pp. 241–254, "The Fortress of Uiticos and the House of the Sun," may be considered together. They describe the search for and finding of the last refuge, stronghold, or "capital" of the Incas.

On pp. 202–203 is a passage about the pigheadedness of certain types of Peruvians, official and otherwise. The passage is timely, and is notable for its moderate language, concealing more indignation than it expresses.

One cannot help regretting that Dr. Bingham did not devote a paragraph or two in this Chapter X to a description of the interesting fortress of Huata, half way between the Anta valley and the Urubamba valley. That fortress, visited in 1914 by the Yale Expedition, is of great importance. On p. 207, Dr. Bingham refers to, but does not name, the interesting ruins of Piñasñiyoc. On pp. 209–211, however, he gives some valuable data on the ruins of Salapunco, some leagues downstream from Ollantaytambo. At p. 210 is a splendid photograph of "Grosvenor Glacier" which provokes a query as to whether Anglo-Saxon names are applicable to Quichua phenomena. One notes with pleasure, on p. 211, that Dr. Bingham intends to describe in a later volume the ruins which abound near Qquente, on the left bank of the Urubamba River below Salapunco. The remainder of the three chapters under consideration is extremely important and of great interest to archaeologists and historians, as well as to geographers and to business men in search of undeveloped resources.

Chapter XIII, pp. 255–265, "Vilcabamba," is especially notable on account of its description, p. 256, of the early Spanish town of Vilcabamba.

Chapter XIV, pp. 266–291, "Conservidayoc," and Chapter XV, pp. 292–305, "The Pampa of Ghosts," contain interesting archaeological and ethnological data.

For many the chief interest in the book will focus upon its three final chapters, Chapter XVI, pp. 306–313, "The Story of Tampu-Tocco, a Lost City of the First Incas," Chapter XVII, pp. 314–325, "Machu Picchu," and Chapter XVIII, pp. 326–340, "The Origin of Machu Picchu."

In brief these chapters may be said to contain the story of a loss that never happened and a find that was never found. Dr. Bingham suffers from a lack of interest in anything that is not hoary with age. He begins his yarn by summarizing the material contained in Montesinos's *Memorias antiguas* regarding the pre-Incaic history of Peru. Then he offers us, with extraordinary solemnity, a digest of the legend of Manco Capac, whom Gonzalez de la Rosa proved to be mythical, and of Manco's legendary "three-windowed" wall, mentioned by Salcamayhua, who wrote so late as 1620. That wall was reputed to exist in a place called Tampu-toco, "Window-tavern." Then Dr. Bingham proceeds to identify Tampu-toco with an important late-Inca and post-Conquest site dubbed "Machu Picchu." In order to substantiate his theory, Dr. Bingham had to find a wall with three windows in it. Such a wall was found at Machu Pichu. But Dr. Bingham here maintains silence as to the fact that the original number of windows in that wall was five, not three. This is fatal. Worse still is the fact that Dr. Bingham deliberately ignores part of the evidence brought to bear by Dr. George F. Eaton, and all of that offered by the late Sir Clements Markham, by Max Uhle and by myself, as to the harsh reality: that Machu Pichu is a recent erection. I hope eventually to publish, as I have permission to do, Sir Clements's letters to me on this subject. They are diverting and important.

With the single exception of his failure to admit frankly his errors regarding Machu Pichu, Dr. Bingham has given us a book which is well-nigh faultless. It is beautifully written, and its illustrations will be indispensable to students for many years to come.

PHILIP AINSWORTH MEANS

OCEANIA

Argonauts of the Western Pacific. An Account of Native Enterprise and Adventure in the Archipelagoes of Melanesian New Guinea. BRONISLAW MALINOWSKI, Ph.D. (Cracow), D. Sc. (London). With a Preface by Sir JAMES GEORGE FRAZER, F. B. A., F. R. S. With 5 maps, 65 [66] illustrations, and 2 figures. London: George Routledge & Sons, Ltd. New York: E. P. Dutton & Co., 1922. xxxi, 527 pp.

Argonauts of the Western Pacific is perhaps one of the most remarkable of recent contributions to the science of anthropology. It deals primarily with one phase of the culture of the Trobriand Islanders, a Papuo-Melanesian people. That phase is the *kula*—the ceremonial exchange of shell bracelets or arm shells and of necklaces of shell discs. Dr. Malinowski has succeeded in presenting a vivid account of the *kula*, not torn, however, from its original setting, but carefully surrounded by its full cultural environment.

The ceremonial exchange is of especial interest as international relations are involved, the exchanges being made between peoples speaking different languages as well as between neighbors speaking a single dialect. A considerable number of islands off the eastern end of New Guinea are united in this ceremonial exchange, forming what the author aptly designates the *kula* ring. Along this ring the necklaces of red shell discs move in a clockwise direction. In the opposite direction move the white arm shells. Arm shells are exchanged for necklaces and vice versa. The individuals who acquire these objects do not retain them permanently, but after a longer or shorter period exchange them. Furthermore each individual has one or more partners both to the right and to the left of him in the *kula* ring. From the partners on one side he receives necklaces and to those partners gives arm shells. From the partners on the other side he receives arm shells and to those partners gives necklaces.

Magic enters into the proceedings at every turn and Dr. Malinowski gives an abundance of formulas; in fact he makes it obvious that magic plays a most important rôle in the whole of Trobriand culture, to say nothing of its preponderating importance in *kula* transactions.

The author devotes himself almost entirely to the presentation of facts bearing on the *kula* exchange. He deliberately avoids the

realm of hypothesis. In fact he cautiously refrains from even expressing his opinion as to the probable origin of the *kula*.

As to the respectable antiquity of the *kula* institution, Dr. Malinowski adduces a number of myths, which, however, are not incontrovertible evidence, considering the rapidity with which such tales arise. Moreover, the type of *kula* myth, the ease with which the *kula* has been abandoned in certain communities in favor of pearling, and the fact that procedure closely approximating the *kula* magic is followed by some communities for non-*kula* exchange give the reader the feeling that the *kula* is the "flower of the plant" and not its root; that it belongs in the relatively late stratum rather than relatively early stratum of social phenomena in the Trobriands.

Throughout his book Dr. Malinowski endeavors most faithfully to view matters through the eyes of his native informants. Whether or not he has succeeded in entirely eliminating the subjective from his book is of course open to question. It is certain, however, that he has set a high standard along these lines. His whole book beams with the refreshing zeal and enthusiasm of one who earnestly aims to portray without bias all that he has seen and at the same time to present the emotions of the participants. It is in short a psychological as well as an ethnographical study.

On the whole the reader cannot fail to be impressed with the minutely painstaking style in which the author presents his material. The book is most carefully cross-referenced in a manner which will appeal to the student.

On one point of style I feel that the author is open to stricture from his professional, but not from his lay, readers. Throughout the book he dwells frequently and at great length on ethnographical method, a feature that the professional anthropologist will perhaps regard as pedantry; for the author sets forth those matters of method which must be obvious to every properly trained ethnologist. The layman on the contrary will perhaps welcome the lengthy expositions of method and the numerous cautions which meet one at every turn, for they will give him a clear insight into the field methods of the ethnologist.

From the editorial and typographical standpoint *Argonauts of the Western Pacific* maintains a standard quite compatible with the fine anthropological achievement of its author.

EDWARD W. GIFFORD

AFRICA

Harvard African Studies, Vol. III; Varia Africana. III. E. A. HOOTON, NATICA I. BATES, editors; RUTH OTIS SAWTELL, assistant editor. The African Department of the Peabody Museum of Harvard University: Cambridge, Mass., 1922. ix, 374 pp., 23 pls.

This latest volume of the *Harvard African Studies* rivals its predecessors both in the excellence of its get-up and the scientific value of the material presented. The latter comprises two very short and two long articles, the former including the late Professor V. Giuffrida-Ruggeri's contribution on "The Actual State of the Question of the Most Ancient Egyptian Populations" (pp. 3–7) and Professor C. Peabody's "Note on Prehistoric Collections from Northwest Africa in the Peabody Museum of Harvard University" (pp. 373–374). The remainder of the volume is devoted to a monograph on "The Folk-Literature of the Galla of Southern Abyssinia" by Dr. Enrico Cerulli (pp. 9–228), and another on "The Wayao of Nyasaland" by Dr. Hugh Stannus (pp. 229–372).

Dr. Cerulli's paper will interest all students of comparative literature. It provides native texts in one of the northern Galla dialects (Máčča), a translation, and explanatory notes. A variety of literary products is exemplified: there are both poetical and prose compositions, the latter including proverbs, riddles, historical narratives, and two brief specimens of Galla humor. The last-mentioned form of story is said to be cultivated by professional jesters maintained at the small courts. On the whole, the songs are of the greatest literary interest. Here, too, there is much heterogeneity; there are war and hunting, love and nuptial songs, pastoral and religious poems. The author calls attention to the occurrence of sound parallelism as a frequent feature of Galla poetry and to the fact that the bards, apparently intoxicated with the device, introduce at times quite meaningless verses for the sake of the jingle (e. g., p. 68, lines 12 and 13). This subject certainly merits fuller treatment. It is not clear from a cursory inspection of the texts what place genuine rhyme plays in Galla poetry—to what extent and between what lines it is deemed desirable, to what extent assonance is considered a proper equivalent, whether there is any discrimination against the exact repetition of the final words or syllables of parallel lines (I suspect there is not). Our curiosity is also roused by the combination of rhyme between the initial as well as the terminal words in two verses,

as on p. 108, text 84. The style itself has a peculiar quality of pithiness not lost even in translation. Thus, one love song reads as follows (p. 115):

> A javelin without blood is not a javelin!
> Love without kisses is not love!

It seems more than likely that we are confronted with a definite influence of Arabic culture on both form and substance of Galla literature, a suggestion that also occurred to my colleague, Professor H. F. Lutz. To trace this influence in detail would doubtless be a fascinating task for one possessed of the requisite linguistic equipment.

Two sections of Dr. Cerulli's contribution will interest those more particularly interested in ethnography—the account of Galla initiation rites (p. 167 et seq.) and the Appendix devoted to the Wáttā pariah caste (pp. 200–214).

Dr. Stannus's amply illustrated paper deals with that part of the Amachinga subdivision of the Yao ruled by chief Malemya. Since it presents a systematic survey of the whole culture, only a few points can here be singled out for special mention. First, as to sociology (esp. pp. 232–236) the early separation of children of both sexes from the parental roof is interesting: the boys live together in a big dormitory, the girls either sleep together in a corresponding hut or stay with their grandmothers until taken in marriage. The Yao are a characteristically matrilineal people; the bridegroom normally marries into his wife's village, the children inherit their mother's clan name, and succession to the chieftainship descends from uncle to sister's son. Whether as a correlate of the services connected with matrilocal residence or for some other reason, no payment is made for the wife—assuredly in marked contrast to the usage of many Bantu tribes. Normally enough, the clan is exogamous, but the sororate in either form is tabooed and a man is prohibited from taking to wife the sister of his brother's wife. The statement concerning the sexual division of labor is interesting in several ways: women, as almost always in primitive society, manufacture pottery, while the men, as seems the rule in Africa as contrasted with Polynesia, make bark cloth; as for horticultural activity,

> together they hoe and together they harvest, but to the woman falls the monotonous drudgery of pounding and sifting the corn flour.

With regard to Yao totemism, which, if I remember correctly, remained an obscure question at the time of Ankermann's meritorious

statistical study of the relevant African phenomena, we are told that there are only a few clans bearing animal names and "practically no clan food taboo" (p. 266). Some valuable data are given concerning kinship terminology, but the author exhibits the naïveté customary among those not specializing in this field when he expresses surprise at the extremely usual classification of parallel and cross-cousins (p. 282), which is correlated with the common discrimination as to marriageability. However, though cross-cousin unions are permitted, they are infrequent "as it is said such marriages are always unhappy." The ample account of boys' and girls' initiation rites (pp. 246–277) merits close study and comparison with Weule's description.

Amachinga religion conforms in its broad outlines to the general beliefs and practices of the Bantu, or indeed of other African natives as well. Sorcery, divination, and ancestor worship are all prominent, and there is a belief in a very ill-defined supreme being who takes little interest in the affairs of mortals but receives the spirits of the departed (p. 312 f.). Spirits may reveal their wishes by possession of the living, in which case a woman invariably plays the medium's part (p. 316). The use of ventriloquism by diviners in extracting answers from their gourd apparatus is an interesting detail (p. 303 f.), likewise the employment of the vapor bath in therapeutics and exorcism (p. 290):

> Over a pot of water in which have been dropped herbs and stones heated in a fire, the patient squats enveloped in a blanket and is thereby subjected to the action of the medicated steam.

The foregoing notes must suffice for the purposes of this review. It is evident that the new addition to the Harvard series is not only indispensable to the Africanist but contains a vast amount of valuable information for the comparative ethnologist.

ROBERT H. LOWIE

SOME NEW PUBLICATIONS

Beyer, Hermann. El llamado "Calendario Azteca." Mexico, 1921, VII, 111 pp.

——. Revista de los publicaciones etnograficas mexicanas recientes. (El Mexico Antiguo, I, 1922, pp. 270–274.)

Casanowicz, I. M. Parsee Religious Ceremonial Objects in the United States National Museum. (Proc. U. S. N. Mus., vol. 61, art. 11, pp. 1–16, pls. 1–7.)

Danzel, Theodor-Wilhelm. Anwendung des völkerpsychologischen Gesetzes vom subjektiv-objektiven Parallelismus zur Deutung von Mythen u. Bräuchen im alten Mexiko. (El Mexico Antiguo, I, 1922, pp. 275–281.)

Dieseldorff, E. P. Welchen Gott stellen die Steinidole der Mayavölker dar? (Sonderabdruak aus der Festschrift Eduard Seler, pp. 47–58, 11 ills., 1 pl.)

Dixon, R. B. The Khasi and the Racial History of Assam. (Man in India, II, March and June, 1922, pp. 1–13.)

Emmons, George T. Jade in British Columbia and Alaska, and its Use by the Natives. (Indian Notes and Monographs, No. 35. New York: Museum of the American Indian, Heye Foundation, 1923, 53 pp., 25 pls.)

Farabee, William Curtis. Indian Tribes of Eastern Peru. Introduction by Louis John de Milhau. (Papers of the Peabody Museum of American Archaeology and Ethnology, Harvard University, vol. X.) Cambridge, 1922. XIV, 194 pp., 28 pls., 20 figs., map.

Fewkes, J. Walter. A Prehistoric Island Culture Area of America. (34th Annual Report of the Bureau of American Ethnology, 1912–1913, Washington, 1922, pp. 35–281, 120 pls., 69 figs.)

Field, S. C. The Influence of Race in History and Politics (Hibbert Journal, Jan. 1923, XXI, no. 2, 287–300.)

Forke, Alfred. Die Literatur der Chinesen. (Deutsche Revue, Nov., 1922, pp. 179–184.)

Fowke, Gerard. Archaeological Investigations. I: Cave Explorations in the Ozark Region of Central Missouri. II: Cave Explorations in other States. III: Explorations along the Missouri River Bluffs in Kansas and Nebraska. IV: Aboriginal House Mounds. V: Archaeological Work in Hawaii. (Bureau of American Ethnology, Bulletin 76.) Washington, 1922. 204 pp., 45 pls., 37 figs.

Gamio, Manuel. Introduction, Synthesis and Conclusions of the Work "The Population of the Valley of Teotihuacan." Talleres graficos de la Nacion: Mexico, 1922. 97 pp., 66 pls.

Gifford, Edward Winslow. California Kinship Terminologies. (University of California Publications in American Archaeology and Ethnology, vol. 18, pp. 1–285, 29 maps.) Berkeley, 1922.

Gregory, William K. *and* Hellman, Milo. Notes on the Type of *Hesperopithecus Haroldcookii* Osborn. (American Museum Novitates, no. 53, 1923, pp. 1–16.)

D'Harcourt, Raoul. La céramique de Cajamarquilla-Niveria (Journal de la Société des Américanistes de Paris, N. S. XIV, 1922, pp. 107–118, 5 figs., 7 pls.)

Heger, Franz. Merkwürdige Altertümer aus Benin in West-Afrika. (Mitteilungen der Geographischen Gesellschaft in Wien, 1921, 104–119.)

Hellman, Milo. *See* Gregory, Wm. K.

Hutton, J. H. Annam-Assam. (Man in India, II, 1922, 158–169.)

Josselin de Jong, J. P. B. De Cultuurtypen en Cultuurphasen. Adi Poestaka: 'S-Gravenhage, 1922. 31 pp.

Koch-Grünberg, Theodor. Die Völkergruppierung zwischen Rio Branco, Orinoco, Rio Negro u. Yapurá. (Sonderabdruck aus der Festschrift Eduard Seler, 205–266, map.)

Malone, James H. The Chickasaw Nation. Memphis: A. R. Taylor Co., 1922. 568 pp. $2.75.

Menghin, Oswald. Oskar Montelius. (Mitteilungen der Anthropologischen Gesellschaft in Wien, LII, 1922, pp. 157–164.)

Morse, Edward S. Additional Notes on Arrow Release. Peabody Museum; Salem, Mass. 48 pp., 5 pls., 36+4 figs.

Nordenskiöld, Erland. Indianer und Weisse in Nordostbolivien. Stuttgart: Strecker & Schroeder, 1922. 220 pp., 35 pls., map, figs.

———. La moustiquaire est-elle indigène en Amerique du Sud? (Journal de la Société des Américanistes de Paris, N. s. XIV, 1922, pp. 119–126.)

———. Deductions suggested by the Geographical Distribution of some Post-Columbian Words used by the Indians of South America. (Comparative Ethnographical Studies, 5.) Göteborg, 1922. XIII, 176 pp., 10 maps.

Oberhummer, Eugen. Rudolf Pöch. (Mitteilungen der Geographischen Gesellschaft in Wien, 1921, 187–189.)

Osborn, Henry Fairfield *and* Reeds, Chester A. Old and New Standards of Pleistocene Division in Relation to the Prehistory of Man in Europe. (Bulletin of the Geological Society of America, vol. 33, pp. 411–490, 1922.)

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———. Fiesta at Sant' Ana, New Mexico. (The Scientific Monthly, 178–183, vol. XVI, Feb. 1923.

———. The Hopi Buffalo Dance. (Man, February 1923, pp. 21–26, 5 figs.)

Patsch, Carl. Südosteuropäische Skizzen u. Studien. (Mitteilungen der Geographischen Gesellschaft in Wien, 1921, 153–186, 12 figs.)

Rassers, Willem Huibert. De Pandji-Roman. Antwerpen: De Vos-Van Kleef, 1922. 370 pp.

Reeds, Chester A. *See* Osborn, Henry Fairfield.

Roy, Sarat Chandra. The Gods of the Oraons. (Man in India, II, 1922, pp. 137–157.)

Saintyves, P. Essais de folklore biblique: magie, mythes et miracles dans l'Ancien et le Nouveau Testament. Paris: Nourry, 1923. XVI, 483 pp.

Speck, F. G. Indians of the Eastern Shore of Maryland. 15 pp., 2 figs., map. Eastern Shore Society, Baltimore, 1922.

Swanton, John R. New Light on the Early History of the Siouan peoples. (Journal of the Washington Academy of Sciences, February 4, 1923, vol. 13, no. 3, 33–43.)

Thorndike, Lynn. A History of Magic and Experimental Science during the first Thirteen Centuries of Our Era. New York: Macmillan, 1923. 2 vols. XL, 835, 1036 pp. $10.00.

Uhle, Max. Los principios de las antiguas civilizaciones Peruanas. (De Boletín de la Sociedad Ecuatoriana de Estudios Historicos Americanos, vol. IV, núm. 12.) 11 pp. Quito, 1920.

———. Los principios de la civilizacion en la Sierra Peruana. (Del Boletín de la Academia National de Historia, vol. I, núm. 1.) Quito, 1920, 13 pp., 7 pls.

———. Sepulturas ricas de oro en la provincia del Azuay. (Tirada aparte del Número 9 del Boletín de la Academia Nacional de Historia.) Quito, 1922, 7 pp.

———. Influencias Mayas en el Alto Ecuador. (Del Boletín de la Academia Nacional de Historia, vol. IV, nums. 10 y 11.) Quito, 1922. 36, iii pp., 50 pls.

———. Origenes Centroamericanos. (Del Número 9 del Boletín de la Academia Nacional de Historia.) Quito, 1922. 6 pp.

———. Fundamentos etnicos y arqueologia de Arica y Tacna. 2ª edicion. Quito, 1922. 99 pp., 27 pls., 26 figs.

Vignaud, Henry. Le problème du peuplement initial de l'Amérique et de l'origine ethnique de sa population indigène. (Journal de la Société des Américanistes de Paris, N. S. XIV, 1922, pp. 1–63.)

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Wiener, Leo. Africa and the Discovery of America. Vols. II and III. Philadelphia: Innes & Sons, 1922. xxii, 287 pp., 15 ills.; xxi, 402 pp., 30 ills.

DISCUSSION AND CORRESPONDENCE

In Reply to Father Morice

On pages 385 to 390 of Volume 24 of the *American Anthropologist*, Father Morice has with delightful irony and sarcasm replied to my review of his recent volume entitled *Essai sur l'origine des Dénés de l'Amérique du Nord*. The major portion of his remarks is devoted to a somewhat vigorous refutation of the statement which he declares me to have made, that he "believed the Indians to be the descendants of the Lost Tribes of Israel." I have no desire to enter into any controversy, but feel obliged in self-justification to point out that his whole charge is quite baseless for I neither said nor in any way implied any such thing. Father Morice has quoted the last lines of my first paragraph, in which I said that he turns "at last to the mirage of the Lost Ten Tribes, and finds in this the final solution of many of his troubles"; he however *omits* to quote or mention the words of the immediately preceding sentence, in which I had said that he "attempts to demonstrate the Asiatic origin of the present Déné culture," or the last words of the following paragraph where I stated that "he ascribes to these (i.e. the Lost Ten Tribes) the origin of many of the cultural elements among the Déné." In each case I referred explicitly to *culture only;* I nowhere even suggested actual descent.

Having constructed a man of straw, Father Morice valiantly and triumphantly demolishes him utterly. All that I think I need say is that, in his own words, you may "characterize such tactics as you will."

R. B. Dixon

BRIEF COMMUNICATIONS

Notes on State Archaeological Surveys

The State Archaeological Survey Committee of the National Research Council is still active and reports increased interest among the States of the Mississippi Valley. The reports of progress covering operations during the year 1921, filed with this Committee, were summarized in Vol. 24, No. 2, of the *American Anthropologist* and in conformity with this there are here submitted extracts from the reports for the year 1922.

Alabama. The 1922 work of the Alabama Anthropological Society included exploration work in sixteen counties in the State, in the case of five of which no work had heretofore been done. This extension work was done directly in conjunction with the Department of Archives and History, and includes largely historical investigations in connection with the aboriginal life of those particular localities.

A survey of two counties in the eastern part of the State was begun and is well under way, with the prospects of completion during the coming season.

The Society is giving during this scholastic year a course of lectures on the early history of the State down to the period of the Indian war of 1813, when the State was really opened up to white settlement. Twenty-one advanced pupils of the Woman's College of Alabama are taking this course. The undersigned is doing much of the lecture work, though other members of the Society will assist from time to time.

Exploration work at the mouth of Pintlala Creek in Lowndes County has been extensively conducted and numerous new evidences of urn burials have been noted. A report covering the details of this work up to that time was published in *Arrow Points* in April, 1922. Evidences of that fine culture noted by Moore at Moundville have been uncovered during the year on Okfuski Creek, on the eastern boundary of Montgomery County. Gorgets and other personal ornaments depicting this Moundville art had previous to this time never been noted this far east.

The designation of aboriginal points as Public Reservations and Park sites is meeting with much popular interest and encouragement and the Department of Archives and History has added a number of these sites to the list during the current year. The Anthropological Society has taken the lead without the assistance of other historical agencies in the State in bringing the attention of the public to these places.—Peter A. Brannon.

Arizona. While not at present giving attention to work within the State, the University of Arizona is coöperating with the Mexican Government in work across the border. The latter half of the year was given to excavation near Tlalpam around a truncated cone. This truncated cone is some 400 feet in diameter at the base and 75 feet high with a superstructure added later that makes its total height 100 feet It is built of lava rock and earth and its surface walls are laid in crude cyclopean style. There are no carved decorations and no hewn stone, nor any mortar or cement of any kind in the entire structure. It had been built, partially ruined, repaired and enlarged, and used again, then shattered a second time and covered with a great amount of débris before the last lava flow occurred. This lava, known as the Pedregal, surrounded it and flowed up over its base walls, already covered with 12 to 15 feet of broken lava-rock and silt.—Byron Cummings.

California. New archaeological sites were located in the Sonoma Valley. A report on shellmound excavations near the town of Richmond, on San Francisco Bay, was prepared for publication and another covering explorations of earth mounds in the San Joaquin delta.—A. L. Kroeber.

Illinois. Mr. W. K. Moorehead continued his researches at the Cahokia group of mounds, the expedition being financed by the University of Illinois. The total number of skeletons recovered up to the present time is about 100. About 4,000 artifacts have been secured.

Indiana. In our coöperative work with the Historical Commission we have prepared maps of about half of the counties in Indiana, on which members of the county historical clubs are expected to locate archaeological deposits. One of these reports has already been received. It is a report on Jefferson County by Professor Glenn Culbertson, of Hanover College. It is a very excellent piece of work and is accompanied by a map showing the location of the

archaeological deposits. We are expecting other reports to be filed within a short time. During the course of our geological field-work we located and visited archaeological remains in Greene, Gibson, and Pike counties. We have ceased to give publicity to the location of these deposits until we can take steps to insure their being preserved. As soon as a newspaper report appears concerning the discovery of the new location the commercial relic hunter immediately proceeds to destroy the value of the deposit.—W. N. Logan.

Iowa. Archaeological survey work for 1922 began with a preparation trip to different study centers in neighboring States. This trip was carried out by the undersigned and had for its purpose the gaining of suggestions and counsel as to the methods used in making a State survey. Calls were made at Madison on Mr. Charles E. Brown, at Milwaukee on Dr. S. A. Barrett and Mr. Alanson Skinner, at Indianapolis on Dr. John M. Oliver. Conferences with the gentlemen named were most profitable and encouraging, and the suggestions received should find much application in the Iowa work. As no attempt has been made for about thirty years to collect and systematize the records of Iowa antiquities, it was deemed best to begin with the preparation of a bibliography and summary of the literature. During the past summer considerable progress was made on this work, which was carried on, for the most part, in the Library of The State Historical Society at Iowa City. A few short field trips were made during the past season, but these were rather in the nature of reconnaissances, no sub-surface work being undertaken. Various mound groups were visited, several collections were examined as to their Iowa contents, and some eight Indian rock-shelters were located on the Maquoketa and Wapsipinicon rivers. All work was done under the auspices and with the support of The State Historical Society of Iowa, Dr. Benj. F. Shambaugh, Superintendent.—Charles Reuben Keyes.

Kentucky. Archaeological investigations for the past summer and fall have been confined to the examination of a few caves on the Cumberland River, mainly one near Mill Springs in Wayne County. As a result of a preliminary examination of this cave, we found the cave or rock house, which was 145 feet deep, 60 feet wide, and 30 feet high, a rich storehouse of animal and human remains. In all we unearthed in whole or in part thirteen human skeletons, with associated implemental remains, such as stone hoes (in large numbers),

flint arrowheads, stone pestles, skinners, bone implements and ornaments, shell beads, one piece of mica, fragments of pottery, and one clay pipe. All the stone implements were made of local material. Practically all of the bone implements were made from either the cannon bones or the ulnas of the deer. The bones of the animals eaten by the occupants of this cave were found in great profusion, all of the long bones and skulls having been cracked for the edible contents. We identified from these bones the following, which are given in about the order of relative abundance: mammals—deer, bear, buffalo, elk, dog or wolf, wildcat, panther, beaver; birds—wild turkey, prairie chicken, crane. The excavations were continued to a depth of four to eight feet, nowhere reaching the original rock bottom of the cave. In one place a stalagmite having a base of eight feet and an original height of six feet was removed and digging continued to a depth of four feet below it. Bones of wild animals, all of existing species, and human implements were found all through this stalagmite and below it. As this stalagmite must have formed very slowly, as there is only a small drip when it rains to account for it, it is certain that this cave or rock house was occupied for a very long time.—Arthur M. Miller.

New England. During the past year Phillips Academy, Andover, Massachusetts, supported a survey of the lower Connecticut Valley and the Rhode Island-Connecticut coast from below Providence to the mouth of the Housatonic. At Milford, Connecticut, on the east side of the Housatonic, was found a shellheap nearly a quarter of a mile in extent. So far as is known this is the largest in New England. A large quantity of broken pottery, flint and bone implements, together with a number of burials, were found. Two skeletons were discovered lying on the shore line of the old river channel. With them were some rude stone ornaments. The survey mapped nearly one hundred sites, historic as well as prehistoric, and expects to continue work next year.—Warren K. Moorehead.

Ohio. Work for the year was taken up with a survey of the noted Hopewell Group of mounds, locating a number of new mounds not heretofore noted. Several of the new mounds were examined during the season and proved of special interest and value in the study of the mortuary customs of this culture. In the Mound City Group examined last year the custom of cremation prevailed and no skeletal remains were in evidence in any of the mounds of that

Group, but at Hopewell inhumation and cremation are in evidence in the same mounds together with the necessary equipment to carry forward the cremative ceremonies. We anticipate splendid results in our examination of this Group.—Wm. C. Mills.

Oklahoma. For several years we have been carrying on a survey, but for lack of sufficient appropriations we have never been able to go very deeply into the work. Our State is rich in archaeological remains. Thousands of mounds, some of which at least have proved to be human habitations, are found, and numerous caves and cliffs which afforded ideal places for early man occur and several of these have been examined.

A few years ago J. B. Thoburn, now in charge of the State Historical Department, Oklahoma City, spent one season in the field. The results of his work were very encouraging and a large amount of material was collected. During the past season a party of four worked in Delaware County where they secured valuable information and made some good collections. During the latter part of the season the writer made some investigations in the Sand Hills along the river in Beckham County near Sayre and found evidences of human occupation. We expect to carry on further investigations in this region. In all, to my knowledge, eleven skulls have been taken from the Sand Hills in this locality and other discoveries which have been made lend considerable interest to the site.—C. W. Shannon.

South Dakota. The work in this State is under the auspices of the State Geological and Natural History Survey; Dr. Freeman Ward, Director; William H. Over, field archaeologist. The period for research each year is usually limited to July and August. Nearly one hundred village sites, once occupied by three prehistoric tribes, have been discovered along the Missouri River. These have been precisely located and plots made of all fortified village sites. Excavations have been made in the earthlodge sites and the refuse heaps. Over two hundred skeletons have been taken from the burying grounds, which, with the material collected, has been deposited in the University Museum.

Systematic work is also being done in the mounds of the Big Sioux Valley and the Big Stone Lake region of the extreme eastern part of the State. Seven mounds were excavated during July and August of 1922 and twenty-eight skeletons and other material secured. It will be necessary to spend one more season in this mound

region and one in going over the scattering villages and camp sites before the survey is complete and ready for publication.—Wm. H. Over.

Wisconsin. In the preservation of groups of Indian earthworks and other remains there has been increased activity, the Wisconsin Archaeological Society and the Indian State Landmarks Committee closely coöperating in this work, the History and Landmarks Committee, Wisconsin Federated Women's Clubs, and the local Daughters of the American Revolution greatly assisting. At Madison four Indian mounds located in three different city parks (Hudson, Elmside, and Burrows) will be marked with descriptive metal tablets by the local Rotary, Kiwanis, and Roxana clubs. The University of Wisconsin has placed metal tablets on the remaining earthworks of three mound groups situated on its grounds. These replace wooden markers formerly in use. The gift of a small tract of land on the north shore of Lake Mendota to the Madison Y. W. C. A. for summer camp purposes preserves a fine linear earthwork.

An especially fine group of twenty-eight effigy and round mounds on the grounds of the newly constructed State Soldiers Memorial Hospital on Farwell Point, Lake Mendota, is being carefully restored under competent direction. Some of these ancient monuments were excavated and others mutilated in obtaining soil some years ago and these holes and pits are being filled in and the mounds sown with grass seed. The group of hospital buildings has been constructed and the roads laid out with a view to permanently preserving the mounds which now add very greatly to the interest of these beautiful grounds.

On the adjoining grounds of the State Insane Hospital the curving tail of a huge panther-type mound has also been restored, it having been under cultivation for a number of years.

Madison now has preserved in public parks and other public grounds a total of about one hundred Indian mounds in eighteen different localities. Most of these are marked with metal tablets.

Near Wyocena in Columbia County is an effigy mound which its owner is presenting to the Society. Being by the side of the highway it is to be included in a small public park and conveniences for tourist picnickers provided.

Other solitary mounds and groups have been or are being permanently preserved at Lake Emily in Portage County, Fox Lake, Nekoosa, and other places.

The Winnebago County auxiliary society has been very active in erecting markers, protecting landmarks of Indian interest, conducting field meetings and researches, and in adding to the anthropological collections of the Oshkosh public museum, of which institution it has undertaken the management.

The work of mapping and investigating Indian remains has gone forward very successfully in parts of Columbia, Richland, Polk, Sauk, Dodge, Dane, and other counties. At various times during the year correspondence has been conducted and conferences held with members of State organizations which are undertaking field-work in Minnesota, Iowa, Illinois, Indiana, and Michigan.

The Society has issued three new publications, "Beaver Dam Lake," "Stoneworks in Winnebago County," and "Western Sauk County." A fourth report on "Lake Monona" is in press. Every year there is a greater call for these reports, especially from school teachers and women's clubs. Markers are being erected on some of the State highways which indicate the location of notable Indian landmarks of particular interest to the traveler. Guidebooks and leaflets referring to these remains are also appearing in different localities.—Charles E. Brown.

CLARK WISSLER

ANTHROPOLOGY AT THE CAMBRIDGE MEETING AND PROCEEDINGS OF THE AMERICAN ANTHROPOLOGICAL ASSOCIATION

The American Anthropological Association held its twenty-first annual meeting at the Massachusetts Institute of Technology and the Peabody Museum of Harvard University, Cambridge, Mass., December 27, 28 and 29, 1922, in conjunction with Section H, American Association for the Advancement of Science; The American Folk-lore Society; and the Maya Society.

One meeting of the Council was held with Vice-President MacCurdy in the Chair.

COUNCIL MEETING, DEC. 27, 9 A.M.

The following reports were read and accepted:

REPORT OF THE SECRETARY

The proceedings of the last annual meeting of the American Anthropological Association were published in the *American Anthropologist* for January-March, 1922. There has been no special meeting of the Association nor of the Council during the year.

The anthropological membership of the Division of Anthropology and Psychology in the National Research Council is now as follows:

To serve until July 1, 1923: Clark Wissler, F. W. Hodge, J. H. Breasted.

To serve until July 1, 1924: B. Laufer, J. W. Fewkes.

The association has lost by death during the year five members: Wm. H. Babcock, Rev. J. B. Nies, Dr. W. H. R. Rivers, Dr. M. H. Simons, James A. Teit.

One member has resigned, five have died, and thirty-seven new members have been added to the list, making a net gain of thirty-one. This gain, however, will be partly offset by the dropping of certain members in arrears carried temporarily on the rolls. The membership at present is as follows:

Honorary members	5
Life members	12
Regular members	538
	555

Respectfully submitted

ALFRED V. KIDDER,
Secretary.

REPORT OF THE TREASURER

Receipts

Balance on hand, December 21, 1921			$1,943.80
American Ethnological Society		$ 334.00	
Anthropological Society of Washington		165.00	
Annual Membership dues:			
1920	$ 5.40		
1921	72.40		
1922	1,376.50		
1923	178.60		
Life membership	100.00	1,732.90	
Sale of publications		308.09	
Reimbursements		115.50	
Interest		27.44	$2,682.93
			$4,626.73

Disbursements

New Era Printing Co:			
Printing, etc	$1,312.60		
Boxing and drayage, back nos.	66.98		
		$1,379.58	
Geo. Banta Publishing Co:			
Printing, etc	$1,040.10		
Freight, drayage, storage, back nos.	434.04		
		$1,474.14	
Joyce Engraving Co.		$ 124.33	
Editor and Secretary-Treasurer's expenses		183.48	
Dues refunded		17.00	
Purchase back nos. *Anthropologist*		13.00	
Drawings		5.00	
Life membership transferred to permanent fund		100.00	
Total disbursements		$3,296.53	
Cash on hand		1,330.20	$4,626.73

Resources

Cash on hand, Dec. 11, 1922			$1,330.20
Due from sales:			
1921	$ 32.22		
1922	44.63		
		$ 76.85	
Due from dues:			
1921	60.00		
1922	217.00		
		$ 277.00	

Due from Anthropological Soc. Wash. Vol. 24, No. 3	45.00		
Due from Am. Ethnol. Soc. Vol. 24, No. 3 and dues	230.00		
Due from above societies after publication Vol. 24, No. 4, about	160.00	$ 435.00	$ 788.85
Total resources			$2,119.05

Liabilities

Membership dues from 1923 already paid	$ 178.60	
Cost of *American Anthropologist*, Vol. 24, Nos. 3 and 4 (est.)	1,100.00	
Total liabilities	$1,278.60	
Net excess resources over liabilities	840.45	$2,119.05

Cost of Publications

American Anthropologist, vol. 23-3			
Engravings	$ 22.23		
Printing	551.16	$ 573.39	
Reimbursements		20.00	$ 553.39
American Anthropologist, vol. 23-4			
Engravings	$ 18.68		
Printing	619.78	$ 638.46	
Reimbursements		15.50	$ 622.96
American Anthropologist, vol. 24-1			
Engravings	$ 39.82		
Printing	453.69	$ 493.51	
Reimbursements		35.35	$ 458.16
American Anthropologist, vol. 24-2			
Engravings	$ 69.79		
Printing	461.60	$ 531.39	
Reimbursements		44.65	$ 486.74
Net Cost			$2,121.25
Reprints and distribution			249.68
Total Cost			$2,370.93

PERMANENT FUND

Receipts

Balance, December 21, 1921		$1,330.62
Interest, April, 1922	$ 6.38	

Interest, Oct., 1922	6.37	12.75
Rec'd from two life memberships		200.00
		$1,543.37

Investments

Liberty Bonds	$ 288.50	
W. S. S.	41.87	$ 330.37
Cash awaiting investment		113.00
Loan to general fund		1,100.00
		$1,543.37

The accounts of the Treasurer, A. V. Kidder, have been examined and found correct.

R. B. DIXON,
E. A. HOOTON,
Auditing Committee.

The total receipts have been about eight hundred dollars less than during 1921. This is due to the new arrangement of not sending out the bills for the ensuing year until Jan. 1, and also to the fact that certain sums due from the two local societies have not yet been called in.

The total disbursements have, on the other hand, been about twelve hundred dollars more than in 1921. This is due to the fact that four numbers of the *Anthropologist* have been paid for in 1922, as against three numbers in 1921; and that approximately five hundred dollars has had to be spent for the transfer of our large stock of back numbers from Lancaster, Pa. to Menasha, Wis. A very considerable saving in publication expense has been made by the Editor through the change in printers; and, what is of even more importance, a much greater punctuality of issue has been attained, no less than five numbers having appeared during the year.

An examination of the statement of Resources and Liabilities shows that the Association is in sound financial condition; but this has been maintained by the strictest economy on the part of the officers and particularly by the very successful efforts of Dr. Swanton in keeping down the cost of publications. I feel that the Editor should be empowered to spend, in the coming year a greater amount for the *Anthropologist*, in order that it may be enlarged both in size and in number of illustrations.

Respectfully submitted,

ALFRED V. KIDDER,
Treasurer.

Report of the Editor

Early in the present year it seemed to the Editor that there was no immediate prospect of any relief from the cumulative delays in the appearance of the *Anthropologist* with which we had been obliged to contend, unless a change were made in printers, and, after obtaining estimates from about a dozen publishing concerns in seven different cities, it was decided, with the approbation of the Committee on Publication, to give the contract for the ensuing year to the George Banta Publishing Co. of Menasha, Wisconsin. The last number of the journal for 1921 appeared so late that it has proved somewhat difficult to make up for the time already lost, but the first three numbers for the current year are now in the hands of our members and practically all of the copy for the fourth number has gone to press. Delays must still be expected, but, if our contributors keep us supplied with material, we hope to be up to date before the end of 1923. Until it is possible to give out dates for the appearance of articles with more assurance, I have not, however, felt inclined to solicit contributions beyond those voluntarily offered, or to initiate any new departures.

We have also been handicapped by an unexpected expense connected with the back issues of the journal. As we were totally unaware of the amount of this material which had accumulated since the foundation of the *Anthropologist* in 1898, in spite of one or two obscure hints from our former printers, we were entirely unprepared for transportation charges of five hundred dollars for transferring these back numbers from Lancaster, Pa., to Menasha, Wis. Moreover, our new printers were unable to furnish storage facilities for the greater part of this material, the best they could do being to obtain storage outside at a monthly outlay of ten dollars. Thus we were not only subjected to an immediate cut in our resources but compelled to face a constant expenditure which threatens to convert what was once a considerable asset into a liability. Had the Editor been aware of the amount of material held in storage at Lancaster, he would have provided for its disposal somewhere in the East.

In consequence of this unexpected financial burden the Editor has made extra efforts to hold expenses down, and the Treasurer has coöperated with him in every way. The assumption of the duties of Treasurer by the Secretary has been an immense relief, particularly in view of the hearty manner in which Dr. Kidder has taken hold of his new duties.

The review section of the *Anthropologist* has continued under the efficient management of Dr. Lowie, who has also contributed materially to the shorter articles and the notes. Material has also been furnished by the second Associate Editor, Dr. Speck, and the advisory sub-committee on publication has responded promptly to every request for assistance.

As soon as the condition of our finances seems to warrant it I would recommend two things: (1) that the Association resume paying for illustrations, and (2) that it attempt to provide for at least one small *Memoir* annually.

With reference to the first of these points it should be remembered that illustrated articles are in a peculiar way an asset to the journal which calls for encouragement. If it is found impracticable to furnish both illustrations and reprints free, it is worth considering whether it might not be wiser to charge for the latter instead of the former, or perhaps, as is the custom with some publications, give contributors a few extra copies of the journal instead of separates. Under the present system the relatively poor contributor, who finds it necessary to use illustrations, may have to forego publication entirely, whereas under the other plan it would be possible for him to have his communications given wide publicity among anthropologists even though he felt unable to purchase additional reprints. In the former case he is forced to be out of pocket; in the latter case it is merely optional with him. Therefore I should like to present the following possible solution of the matter for your consideration. I suggest: (1) that the Association pay for illustrations; (2) that contributors pay for all of their own reprints; but (3) that each contributor be given the privilege of sending in, say, ten addresses to which as many copies of the journal containing his paper will be sent free of charge, or that the same number of copies of the journal be sent to him, as he may elect. I may state parenthetically that reprints now cost the Association almost a hundred dollars per issue. It is to be understood that the above plan is put forth only in case the Association feels unable to furnish both illustrations and separates.

On the second point mentioned I merely wish to say that some of our members were attracted to become such largely by the *Memoirs*, and I feel in some way a moral obligation to resume the publication of them as soon as possible.

In my last report I alluded to the possible introduction of certain changes in the form and time of appearance of the *Anthropologist*.

Such innovations should be made cautiously, but I would be very glad if, between now and the next annual meeting, you would consider the advisability of converting the journal into a bi-monthly—six issues per year instead of the present four. This would not involve great additional expense if the total number of pages remained approximately the same as now, and it would therefore not preclude the publication of a *Memoir* in addition.

The editor had hoped it would be possible considerably to expand the department devoted to anthropological news, but in view of our limited space and infrequent publication, it has seemed for the present wiser to confine ourselves principally to original material.

Respectfully submitted,

JOHN R. SWANTON,
Editor.

The Treasurer recommended the following budget for 1923, which was adopted:

Publications	$3,200
Expenses of officers	100
Storage and back numbers	120
	$3,420

It was moved and passed that:

The Editor be authorized to pay for the illustration of articles at his discretion.

That the Editor be empowered to renew if desirable the publication of *Memoirs*.

That the Editor be directed to supply fifty reprints without covers to authors of articles appearing in the *Anthropologist* or in the *Memoirs*.

That the Treasurer be empowered to fix prices for incomplete sets of back numbers of the publications of the Association.

Dr. P. E. Goddard, chairman of the committee to consider methods of voting by mail on questions of particular moment which may be submitted to the Council, reported by letter that the opinion of the committee was unfavorable to taking action on the matter at the present time.

The following committees were appointed:

On nominations: R. B. Dixon, E. Sapir, M. H. Saville, N. C. Nelson, A. V. Kidder.

On resolutions: F. Boas, C. C. Willoughby, H. J. Spinden.

On Spencer Fullerton Baird Memorial: C. Wissler, E. A. Hooton, A. M. Tozzer.

On Indian policy: W. K. Moorehead, H. J. Spinden, Alice White, Wm. Gates, Elsie Clews Parsons, F. G. Speck.

The following new members were elected: E. Arnett, J. F. Brady, Brown School of Sociology, Wm. L. Bryant, N. L. Bull, B. T. Butler, L. Child, E. Clark, J. A. Cosculluela, Mrs. Estabrook, V. J. Evans, W. N. Ferris, D. Forsyth, T. R. Garth, A. A. Giesecke, A. A. Goldenweiser, D. E. Harrower, K. W. Hiersemann, E. R. F. Johnson, W. T. Johnson, M. V. Jones, R. J. Kellogg, J. A. Kilbourn, G. C. Kreidel, E. Loosjes, L. L. Loud, W. C. MacLeod, E. L. Matlock, W. P. Morgan, Y. S. Nathanson, W. B. Nickerson, H. F. Osborn, Princeton University Library, San Diego Museum, Sante Naccarati, J. K. Shyrock, F. Somer, H. H. Stark, F. A. Stengel, J. Stockley, S. Umehara, G. C. Vaillant, L. E. Valcarcel, C. Wilde, W. Wildshut, C. L. Wilhelm, W. C. Wyman, F. R. Wulfsin.

ANNUAL MEETING, DEC. 29, 9 A.M.

The following list of officers was presented by the Nominating Committee:

President: Walter Hough.
Vice-President (1926): F. C. Cole.
Secretary-Treasurer: A. V. Kidder.
Editor: J. R. Swanton.
Executive Committee: G. B. Gordon, F. W. Hodge, A. Hrdlička.
Council (1926): Alice C. Fletcher, Rachael Lothrop, Elsie Clews Parsons, S. Culin, R. H. Lowie, C. H. Hawes, E. Sapir, N. C. Nelson, J. A. Mason, H. Bingham, E. W. Gifford, H. Webster, H. E. Smith, G. B. Gordon, D. Jenness, F. H. Saville.
Representatives of the Association on the National Research Council to serve for three years from July 1, 1923: J. R. Swanton, F. G. Speck.
Delegates of the Association to Section H of the A. A. A. S.: A. Hrdlička, F. W. Hodge, E. A. Hooton.

The above officers and members of the Council were declared elected by a vote ordered cast by the Secretary.

The Vice-President and Chairman, Dr. G. G. MacCurdy, appointed the following committees with power to act:

To investigate the status of Anthropology in United States Government institutions: R. B. Dixon, C. Wissler, F. W. Hodge, B. Laufer, A. E. Jenks, A. L. Kroeber, W. C. Farabee, G. G. MacCurdy, A. V. Kidder.
To determine the place of the next annual meeting of the Association: A. Hrdlička, F. W. Hodge, E. A. Hooton.

The following Committees were appointed subject to the confirmation of the incoming President:

Joint Committee on Relations with Central States Section: C. Wissler, G. G. MacCurdy, B. Laufer, S. A. Barrett.

Committee on Program: F. G. Speck (Chairman), A. V. Kidder (Sec'y *ex-officio*), P. E. Goddard, H. U. Hall, M. H. Saville, C. M. Barbeau, S. J. Guernsey, N. M. Judd, S. K. Lothrop.

Committee on Finance: R. B. Dixon (Chairman), Wm. Gates, G. G. Heye, C. B. Moore, E. E. Ayer, W. H. Furness, C. L. Hay, A. M. Huntington, J. B. Stetson, Jr.

Committee on Policy: Clark Wissler (Chairman), W. H. Holmes, S. Culin, G. B. Gordon, W. C. Mills, C. Peabody, F. Boas, J. W. Fewkes, A. E. Jenks, E. C. Parsons, A. M. Tozzer.

Committee on Publication: Walter Hough (Chairman *ex-officio*), J. R. Swanton, (Sec'y *ex-officio*), S. A. Barrett, S. Culin, J. W. Fewkes, A. A. Goldenweiser, F. W. Hodge, E. A. Hooton, A. Hrdlička, A. E. Jenks, A. L. Kroeber, B. Laufer, G. G. MacCurdy, W. K. Moorehead, S. G. Morley, E. Sapir, H. J. Spinden, H. N. Wardle, C. Wissler. *Advisory Subcommittee:* F. W. Hodge (Chairman), J. W. Fewkes, B. Laufer.

The following papers were presented:

The Racial Factor in the Incidence of the Supracondyloid Process. R. J. Terry, Washington University.

Fetal Growth in Man. Adolph Schulz, Johns Hopkins Medical School.

The Anthropological Significance of Suture Closure. T. Wingate Todd, Western Reserve University Medical School.

The Age Order of Epiphyseal Union. Paul H. Stevenson, Pekin Union Medical College.

Individual and Group Variation as Shown by the Sargent Test of Physical Efficiency. Ledyard Sargent, Sargent School of Physical Education.

New Observations on Early Man in the Old World. Aleš Hrdlička, U. S. National Museum.

The Incidence and Heredity of Facial Hypertrichoses and The Resistance of Hair to Certain Supposed Growth Stimulants. Spencer Trotter.

Physical Aspects of the Caste System in India. B. S. Guha, Harvard University.

Problems in the Origin and Distribution of Parasitic Diseases. Herbert J. Spinden, Peabody Museum, Harvard University.

Mental Fatigue of Mixed and Full-Blood Indians. T. R. Garth, University of Denver.

Heredity of Build. Charles B. Davenport, Station for Experimental Evolution, Cold Spring Harbor, N. Y.

The Application of Anthropology to Clinical Medicine. A. The Problem from the Standpoint of the Clinician. George Draper, Presbyterian Hospital, New York. B. Adapting Anthropometric Methods to the Patient. David Seegal, Presbyterian Hospital, New York.

Coöperative Research in Anthropometry. Clark Wissler, American Museum of Natural History, New York.

Physical Anthropology in America: What It Has Already Accomplished and What Remains for It to Do. Aleš Hrdlička, U. S. National Museum, Washington, D. C.

The Distribution of Human Types. R. BENNETT BEAN, University of Virginia, Charlottesville, Va.

Anthropometrical Studies Applied to the Hygiene of School Children. JOHN C. GERHART.

The Basis of Social Organization. A. A. GOLDENWEISER, New School for Social Research, New York.

The "Harvard African Studies." RUTH O. SAWTELL, Phillips Academy, Andover, and the Peabody Museum, Harvard University.

Some Anthropological Problems of China. CHI LI, Harvard University.

Field Work in Hawaii. K. P. EMORY, Bishop Museum of Honolulu, and Harvard University.

Problems in Athabascan Morphology. EDWARD A. SAPIR, Victoria Memorial Museum, Ottawa.

The Development of the Speech Function among the Indo-Germanic Races. MARK H. LIDDELL, Purdue University.

Notes on the Progress of Archaeology in Europe. N. C. NELSON, American Museum of Natural History.

The Copper Eskimos and Their Early Home. D. JENNESS, Victoria Memorial Museum, Ottawa, Canada.

The Geographical Distribution of Potsherds in the San Francisco Mountains of Arizona. HAROLD S. COLTON, University of Pennsylvania.

(a) *Recent Palaeolithic Discoveries in Siberia.* (b) *Certain Specimens from the Rivière Collection now in the Peabody Museum of Yale University.* GEORGE GRANT MACCURDY, Yale University.

Pictograph Slabs in the Southern United States. W. E. MYER, Bureau of American Ethnology.

Studies at the Cahokia Mounds. WARREN K. MOOREHEAD, Phillips Academy, Andover, Mass.

Pottery Distribution of the Northeastern United States. GEORGE VAILLANT, Harvard University.

The Racial History of the American Indian. ROLAND B. DIXON, Peabody Museum, Harvard University.

Tree-ring Studies in the Relative Chronology of Archaeological Remains. A. E. DOUGLASS, University of Arizona.

The Friendly Lion. PHILLIPS BARRY.

The Primitive Mind. A. A. GOLDENWEISER, New School for Social Research.

Folk Songs of French Canada. C. M. BARBEAU, Victoria Memorial Museum, Ottawa.

Divination among the Bassa Clans of Southern Cameroun. GEORGE SCHWAB, Peabody Museum, Harvard University.

Weather Lore of the Texas-Mexican Border. J. FRANK DOBIE, University of Texas.

Variations at Taos from Pueblo Indian Culture. ELSIE CLEWS PARSONS.

Sociological Effects of Ignorance in Regard to the Nature of Procreation. GEORGE WILLIS COOKE, Francetown, N. H.

The "Chac Mool" Figures. STANSBURY HAGAR, New York City.

The Culture Significance of Language Groupings in Middle America. HERBERT J. SPINDEN, Peabody Museum, Harvard University.

The Ruins of Tuluum. SYLVANUS G. MORLEY, Carnegie Institution.

The Cenote Report. ALFRED M. TOZZER, Peabody Museum, Harvard University.

The History of the Maya and Aztec Numerations. LEO WIENER, Harvard University.

Three Maya Glyphs. WILLIAM GATES.

Catherwood's Drawings in the Field of Mayan Antiquities. MARSHALL H. SAVILLE, Museum of the American Indian, Heye Foundation, New York, N. Y.

The following papers were read by title:

Occipito-vertebral Variations. BRUNO OETTEKING, Museum of the American Indian.

Preliminary Observations on the Relation between Head-form and Certain Types of Visual Defects. H. L. SHAPIRO, Harvard University.

Observations on the Eruption of Teeth in Relation to Growth and Development. MILO HILLMAN.

Survey of Anthropometrical Data Collected in American Colleges. FLORENCE A. MEYER.

The Hereditary Family Hunting Territory as the Basis of Lenâpe Social Organization. WILLIAM CHRISTIE MACLEOD, University of Pennsylvania.

Comments upon the Manuscript of Felipe Guaman Poma de Ayala. PHILIP A. MEANS, Peabody Museum, Harvard University.

Feather Mantles of California. C. C. WILLOUGHBY, Peabody Museum, Harvard University.

Progress of the National Geographic Society's Pueblo Bonito Expedition. NEIL M. JUDD, U. S. National Museum.

On the Origin of Ornament—a Psycho-physiological View. ADOLFO DE HOSTOS, Porto Rico.

Food Plants of the Indians of Guatemala. WILSON POPENOE, U. S. Bureau of Agriculture, Washington, D. C.

ALFRED V. KIDDER,
Secretary.

ANTHROPOLOGICAL NOTES

A New York Law Against the Forgery of Archaeological Objects

The following bill, drafted by Mr. Arthur C. Parker, Archeologist of the New York State Museum, has passed both branches of the New York Legislature:

AN ACT

To amend the penal law, in relation to the reproduction or forgery of archeological objects.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1. The penal law is hereby amended by adding at the end of article eighty-six a new section, to be section nine hundred and fifty-nine, to read as follows:

§959. Reproduction or forgery of archeological objects. The reproduction or forgery of any archeological object which derives its value from its antiquity, or the making of any object, whether copied or not, with intent to represent the same to be an original and genuine archeological specimen, with intent to deceive or offer such object for sale or exchange, representing the same to be the original and genuine; or knowingly to have possession of any such reproduced or forged archeological objects, with intent to offer the same as original and genuine, is a misdemeanor punishable by a fine of not less than twenty-five nor more than two hundred dollars or by imprisonment in the county jail for not more than ninety days, or by both such fine and imprisonment.

§2. This act shall take effect September first, nineteen hundred and twenty-three.

Miss Alice C. Fletcher, Assistant Ethnologist of the Peabody Museum, Harvard University, since 1882, and holder of the Thaw Fellowship in American Archaeology and Ethnology since 1891, died at her home in Washington, D. C., April 6, 1923. An extended account of her life and work will appear in a later issue of the *Anthropologist*.

Prof. Franz Boas was invited by the president of Bryn Mawr College to give a series of three lectures to students in April. His titles were "The Aims and Methods of Anthropology," "The Races and Languages of Man," and "The Diffusion of Cultural Traits and the Continuity of Cultural Development."

DR. WALDEMAR JOCHELSON, who is now at the American Museum of Natural History preparing the results of his Aleut Expedition, delivered an address on the Aleuts before the Anthropological Society of Philadelphia in April.

DR. SPENCER TROTTER, who is conducting courses in Anthropology at Swarthmore College, has left part of his work in charge of Dr. Frank G. Speck of the University of Pennsylvania and is leaving for a trip of reconnaissance in the South Pacific.

DR. W. C. FARABEE has returned to Philadelphia from Peru and Chile.

IT may be surprising to learn that the northeastern Australian aborigines (Dieri, Ngameni, Nauroworka) numbering 12,000 some fifty years ago are now reduced through tuberculosis and syphilis and the ills attending the settling of their habitat by Europeans to 120 souls.

DR. A. A. GOLDENWEISER, in April, gave a series of six lectures on "The New Psychology and Early Civilization" in Philadelphia under the auspices of the Pennsylvania School of Social and Health Work. He presented the following titles: "Psychology and Social Science," "J. G. Frazer and the Psychoanalysts," "Freud's Interpretation of Primitive Society," "Jung and Racial Theory," "Dreams and Myths," and "The Social Uses of Psychology."

MR. NEIL M. JUDD, Curator of American Archaeology in the U. S. National Museum, left Washington May 4 to resume direction of the National Geographic Society's expedition for the exploration of Pueblo Bonito, New Mexico. His staff this year includes nine especially qualified assistants. At the close of the season, several well-known experts in other branches of the human sciences will participate in the annual conference on problems relating to the ruin.

DR. GEORGE GRANT MACCURDY, Curator of Anthropology in Yale University, has been appointed Research Associate in Prehistoric Archaeology with professorial title.

IN April a monument was erected by the Museum of the Universidad Nacional de La Plata to the memory of its founder, Dr. Francisco P. Moreno. The American Anthropological Association was invited

to participate through a representative in the accompanying ceremonies, but found it impractical to do so.

DR. RUDOLPH SCHULLER has been recently engaged in studying the Maya dialects of the southern part of Campeche, with the particular object of investigating the differences in pronunciation which exist between the Maya proper of Yucatan, the Huaxteca-Tének of San Luis Potosí, and the Maya dialects as spoken today in Campeche and Quintana Roo. He expected to spend all of the month of April at least at a small Indian place called Ikáitsé, on the border of Guatemala, and cross over to Chiapas in May to visit Tsental speaking Indians, and Tsamulos.

CHUKCHI and Eskimo grave material from Puotin Bay, south of East Cape, Siberia, has been acquired by the State Museum at the University of Washington. The collection, made by Capt. Joe Bernard early in 1922, includes several skulls from the graves and some Chukchi ethnological specimens.

DR. ALEXANDER A. GOLDENWEISER of the New School for Social Research will lecture at the University of Washington during the Summer Quarter, 1923. He will offer two courses, "Primitive Social Life," and "Theories of Evolution and Progress."

COLUMBIA UNIVERSITY offers two introductory graduate courses in the Summer Session of 1923, "Introduction to Anthropology," and "Social Organization," to be given by Dr. Leslie Spier of the University of Washington.

HENRY VIGNAUD, President of the Société des Américanistes de Paris, died on Sept. 16, 1922.

DR. R. H. CODRINGTON, the "apostle of Melanesia," whose works on *The Melancsian Languages* and *The Melanesians, their Anthropology and Folk-lore* are now classics, and who first made known to ethnologists the principle of "Mana," died in 1922 at the age of ninety-two years.

THE NATIONAL RESEARCH COUNCIL has been entrusted by the Rockefeller Foundation with the expenditure of a sum of $325,000, available between July 1, 1923, and June 30, 1928, to promote research in the biological sciences, including Zoölogy, Botany, Anthropology, and Psychology, by post-doctorate research fellowships.

Further information may be obtained by addressing the "Secretary, Board of Fellowships in the Biological Sciences, National Research Council, Washington, D. C."

At the second assembly of the League of Nations it was decided that coöperation among intellectuals in different countries of the world was a necessary step towards universal peace, and a Commission on Intellectual Coöperation was formed. One of the sub-committees of this Commission deals with bibliography and aims to institute an international bibliographical bulletin and scientific review. It will also discuss the possibility of forming one or several large international libraries at which all books published in all countries will be deposited.

The next Pan-Pacific Science Congress is to open at Melbourne, Australia, Aug. 13, 1923, and close at Sydney, Sept. 3. The tentative list of subjects for papers and discussion in Anthropology and Ethnology includes: Polynesian and Melanesian races, Australian aborigines, totems, languages, folk-lore, anatomy.

Reports from Commander J. C. Thompson and Hans G. Hornbostel, representing the Bishop Museum, indicate successful outcome of the explorations in Guam and in the southern Marianne Islands. Much information has been obtained regarding the culture of vanished Chamorros, a flourishing race, at the time of Magellan's visit in 1521. Under the direction of M. F. Malcolm, assisted by the governnor of Saipan, the remarkable ruins on the Japanese island of Tinian, visited by Anson (1749), Mortimer (1791) and Freycinel (1817), are being studied with a view to enlarging the knowledge of migration routes and inter-relations of Pacific peoples.—*Science.*

At the tenth session of the International Geographical Congress, held at Rome, in April, 1922, the Executive Commission of that Congress voted that the eleventh session be held in Cairo, Egypt, in 1925 under the designation "The International Geographical and Ethnological Congress." The first circular of the Organizing Committee of that session has been received, containing a list of the membership of the Committee and inviting contributions. It is stated that the probable date of the Congress will be about March 10, 1925.

To aid the Association for the Preservation of the Archaeological Monuments of Yucatan, the organization of which was announced in

an earlier number of the *Anthropologist*, an American Committee has been formed. Among the anthropologists on this committee are: M. H. Saville, Clarence L. Hay, S. G. Morley, and A. M. Tozzer.

MR. P. E. NEWBERRY has been appointed President of Section H (Anthropology) for the next meeting of the British Association for the Advancement of Science, which is to be held in Liverpool in September, and Mr. E. N. Fallaize, Vinchelez, Chase Court Gardens, Enfield, Middlesex, has been appointed Recorder.

DR. ANDERS SVEN HEDIN, of Stockholm, who spent thirteen years exploring Thibet and Eastern Turkestan, arrived in New York on February 13 on the Hamburg-American liner *Hansa*. He will lecture and will also visit Americn Indian ruins.—*Science*.

DR. JOHN C. MERRIAM, President of the Carnegie Institution; Dr. Marshall H. Saville, of the Heye Museum, Dr. Sylvanus G. Morley of the Carnegie Institution, Mr. Herbert J. Spinden, of the Peabody Museum, and Mr. William Barclay Parsons, chairman of the Archaeological Institute of Yucatan, visited Yucatan this spring with a view to instituting investigations on the Maya civilization.

"SCIENCE" reports that Dr. Forest B. H. Brown, Botanist of the Bishop Museum at Honolulu, and Dr. Elizabeth Brown, Research Associate in Botany, have returned from two years spent in the Marquesas Islands as members of the Bayard Dominick Expedition, bringing with them much new information bearing on the migrations of the Marquesans and other branches of the Polynesian races derived from a study of their food, ceremonial, and medicinal plants.

A communication from the Permanent Secretary of the A. A. A. S. states that

> The summer meeting of the American Association for the Advancement of Science for 1923 is to be held in Los Angeles, Calif., September 17 to 19 inclusive, being a joint meeting of the Pacific Division and the Southwestern Division along with the Association as a whole. Details of arrangements are in the hands of Mr. W. W. Sargent, Golden Gate Park, San Francisco, Secretary of the Pacific Division, and Doctor D. T. MacDougal, General Secretary, A. A. A. S. (Desert Laboratory, Tucson, Ariz.) is acting as representative of the Association as a whole for this occasion. The meeting will be very unusual and probably epoch making in that it will almost immediately follow the solar eclipse of September 10 and there will be included many first reports on that happening.

DR. J. W. FEWKES, Chief of the Bureau of American Ethnology, has been elected a Corresponding Member of the Anthropologische Gesellschaft of Vienna.

THE INTERNATIONAL COMMISSION OF EUGENICS met at Brussels, Saturday, Oct. 7, and Monday, Oct. 9, 1922.

MR. W. J. PERRY has been appointed to a university readership in cultural anthropology and Dr. Bronislaw Malinowski to a readership in social anthropology in University College, London.—*Science.*

DR. EDWARD SELER, Professor of the Friedrich Wilhelms Universität at Berlin and Director of the Museum für Völkerkunde, well known for his Mayan and Mexian researches, died Nov. 23, 1922.

PROF. ERASMUS MAJEWSKI, the Polish anthropologist, died at Warsaw, November 15, 1922.

"A group of archaeologists of different nationalities, American, Belgian, British, Dutch, French, German, and Italian, recently met at the British School of Archaeology in Rome to discuss the feasibility of an international institute of archaeology, which should collect and publish current archaeological news, and which might undertake the publication of large works requiring the coöperation of archaeologists of different nations.—*The Antiquaries' Journal* (II, 1922), *quoted in American Journal of Archaeology*, XXVII, no. 1.

SHORTLY before his departure for Florida, the President signed a proclamation making a National Monument of three groups of towers in southwestern Colorado and southeastern Utah. It is to be called the Hovenweep National Monument, from a Ute word meaning "the deserted valley," applied to a neighboring canyon many years ago. This reservation was originally suggested by Dr. J. Walter Fewkes, Chief of the Bureau of American Ethnology, and the preliminary work has been done by the Bureau of Ethnology in coöperation with the National Park Service of the Department of the Interior.

THE SECOND ANNUAL MEETING of the American Anthropological Association, Central Section, was held in the Trustees' Room of the Milwaukee Public Museum, Milwaukee, Wis., March 2d and 3d, 1923. A full account of the proceedings will appear in the next number of the *Anthropologist.*

AMERICAN ANTHROPOLOGIAL ASSOCIATION
OFFICERS AND MEMBERS 1923

OFFICERS

PRESIDENT: WALTER HOUGH, U.S. National Museum.
VICE-PRESIDENT, 1923: JOHN R. SWANTON, Bureau of American Ethnology.
VICE-PRESIDENT, 1924: G. G. MacCURDY, Yale University.
VICE-PRESIDENT, 1925: STEWART CULIN, Brooklyn Institute Museum.
VICE-PRESIDENT, 1926: F. C. COLE, Field Museum of Natural History.
SECRETARY-TREASURER: A. V. KIDDER, Phillips Academy.
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